This document gives pertinent information concerning the VPDES Permit listed below. This permit is being processed as a Major, Industrial permit. The discharge results from the operation of a 1588 Mega Watt (MW) oil / natural gas fired stream electric power plant. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260-00 et seq.

1. Facility Name and Address: Virginia Electric and Power Company
5000 Dominion Boulevard
Glen Allen VA 23060

SIC Code : 4911

Facility Location: Possum Point Power Station
19000 Possum Point Road
Dumfries, VA22026

2. Permit No.: VA0002071 Expiration Date: September 13, 2006

3. Permit Contact - Name: Bob Williams
Title: Environmental Consultant
Telephone Number: (804)273-2994 Email: Bob.Williams@dom.com

4. Facility Contact - Name: Jeff Marcell
Title: Senior Environmental Coordinator
Telephone Number: (703)441-3813 Email: Jeffrey.R.Marcell@dom.com

5. Permit Drafted By: Alison Thompson Date Drafted: 11/29/06
Draft Permit Reviewed By: Thomas Faha Date Reviewed: 1/24/07
Public Comment Period : Start Date: 8/13/07 End Date: 9/12/07

6. Receiving Waters Information:

Receiving Stream Name :	Outfall 001 / 002 – Quantico Creek	River Mile:	QUA 000.83
	Outfall 003 – Quantico Creek	River Mile:	QUA 000.97
	Outfall 004 – Mouth of Quantico Creek	River Mile:	QUA 000.29
	Outfall 005 – UT to Quantico Creek	River Mile:	XGR 000.14
	Outfall 007 – Potomac River	River Mile:	POT 078.85
	Outfall 008 – Potomac River	River Mile:	POT 078.85
Stream Basin:	Potomac	Subbasin:	Lower Potomac
Section:	06	Stream Class:	II
Special Standards:	b	Waterbody ID:	VAN-A26E
7Q10 Low Flow:	Tidal	7Q10 High Flow:	Tidal
1Q10 Low Flow:	Tidal	1Q10 High Flow:	Tidal
Harmonic Mean Flow:	Tidal	30Q5 Flow:	Tidal

7. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

- ✓ State Water Control Law
- ✓ Clean Water Act
- ✓ VPDES Permit Regulation
- ✓ EPA NPDES Regulation (Federal Register)
- ✓ EPA Guidelines
- ✓ Water Quality Standards
- ___ Other

8. Permit Characterization:

✓ Private	✓ Effluent Limited	✓ Possible Interstate Effect
___ Federal	✓ Water Quality Limited	___ Compliance Schedule Required
___ State	✓ Toxics Monitoring Program Required	___ Interim Limits in Permit
___ POTW	___ Pretreatment Program Required	___ Interim Limits in Other Document

✓ Industrial (SIC Code: 4911) See Attachment 1 for Industrial Ratings Worksheet

9. Power Generation Description:

This facility generates electrical power using #6 low sulfur fuel oil, #2 fuel oil and natural gas. The facility can generate a total of 1588 Mega Watts. In June of 2003, Units 1 and 2 were retired and during that same year Units 3 and 4 were converted to natural gas. Unit 6 was also commissioned in 2003. With this retirement and fuel conversion of these units at this facility, coal is no longer a fuel source at this facility. Table 1 details the generating units currently at the facility. A schematic/flow diagram of the wastewater treatment systems is on file with the 2006 permit application.

TABLE 1 – Generating Units

Units	Fuel Source	Max. Power Generated
1 & 2	#2 Low Sulfur Fuel Oil	Offline - retired
3 & 4	#2 Natural Gas	101 MW & 221 MW
5	#6 low Sulfur Fuel Oil	786 MW
6	#2 Fuel Oil and Natural Gas	465 MW
Combustion Turbines 1-6	#2 Fuel Oil	15 MW

10. Wastewater Treatment Description:

Table 2 details a breakdown of the discharge sources and treatment for each outfall with a total discharge flow of (246 MGD). Attachment 2 depicts the outfalls provided in Table 2. See Attachment 4 for additional descriptions.

TABLE 2 – Outfall Description

Outfall	Discharge Sources	Treatment and Sampling Location	Flow	Latitude and Longitude
001/002	**Once through, Non-contact Condenser Cooler Water, from Units 3 and internal outfalls 201 & 202.** Seal Pit water is recycled for: use in the recirculating cooling water system of Unit 5 and in freeze protection for the water intake structures. Also stormwater from 2.5 acres.	Treatment: None. The cooling waters from Unit 3 are discharged and combined with river water (needed after Units 1 and 2 went off line) in a common Seal Pit and then discharged. Sampling Point: After Seal pit in 002's discharge pipe after 201 & 202 enters.	Average 112.5 MGD	**38° 32' 12"** N **77° 17' 00"** W
201	**Unit 5 Cooling Tower Blowdown.** The cooling water is chlorinated (antifoulant) and then dechlorinated.	Treatment: Chlorination and dechlorination. Enters the 001 / 002 piping downstream from the seal pit. Intermittent in nature. Sampling Point: Sample tap on pipe before it enters 002 discharge pipe. This discharge is intermittent in nature.	Average 3.1 MGD	**38° 32' 11"** N **77° 16' 57"** W
202	**Unit 6 Cooling Tower Blowdown.** On average, circulated four times. The cooling water is chlorinated and then dechlorinated.	Treatment: Chlorination and dechlorination. Enters the 001 / 002 piping downstream from the seal pit. Sampling Point: Sample tap on pipe before it is discharged into the Seal Pit. This discharge is intermittent in nature.	Average 1.0 MGD	**38° 32' 11"** N **77° 16' 57"** W

003	**Once through, Non-contact Condenser Cooler Water from Unit 4.** No Chemicals are added to cooling water system.	Treatment: None. Sampling Point: sample at the end of the pipe.	Average 120.6 MGD	**38° 32' 17**" N **77° 16' 58"** W
004	Unit 6: Low Volume Waste Basin, sand filter backwash, Quench water (river water), wastewater sump, boiler blowdown, turbine wash water, false start drains, RO & e-cell blowdown, clarifier drains, neutralization pit and stormwater. Unit 5. Condenser Drain, cooling tower drift, yard drain, EDR backwash (water filtration), and sand filter backwash. Unit 3 & 4: floor drains, boiler blowdown, and low volume wastes. Also stormwater from 18.75 acres.	Treatment: A series of 4 ponds with a total capacity of 3.1 million gallons, approximately 1.42 acres in size. Sedimentation, flocculation, neutralization, and chemical precipitation with a total retention time of 24 hours. Sampling Point: End of the catwalk at the end of the 4th pond.	Average 1.3 MGD	**38° 31' 57**" N **77° 17' 04"** W
005	**Ash Pond E:** Storm water from three separate drainage areas that total 130 acres and internal outfalls 501 and 502.	Treatment: A 260 million gallons capacity pond, which is approximately 40 acres in size. Sedimentation and flow equalization with a retention time of 110 days. Sampling Point: at the weir at the spillway below the discharge structure.	Average 2.0 MGD	**38° 33' 10**" N **77° 12' 36"** W
501	**Metals cleaning waste basin.** Boiler wash water, air preheater rinse, electrostatic precipitator rinse, economizers and heat exchangers and piping systems.	Treatment: two ponds: A (18 MG) and B (7 MG) capacities, in series. Pond B discharges to Pond A that batch discharges to Ash Pond E after mixing, neutralization, sedimentation, and chemical precipitation. Sampling Point: weir below Pond A.	Average 2.0 MGD	**38° 32' 58**" N **77° 17' 20"** W
502	**Oily Waste Basin.** Unit 5: Low Volume Waste (floor drains, boiler blowdown, hotwell blowdown, HP flash tank drain, evaporator blowdown, flash evaporator condensate dump). Unit 6: cooling tower drift and turbine false start drains. Other: Tank bottoms, Auxilary Boiler blowdown, and stormwater.	Treatment: Batch discharge after providing flotation (with a skimmer) and sedimentation treatment in a 13.5 million gallon capacity basin. Waste Oil is pumped from the basin for use as a fuel for Unit #5. Sampling Point: Pressure gage just after being pumped from the basin. There is a value to acquire the sample.	Average 0.6 MGD	**38° 32' 42**" N **77° 16' 39"** W
007	**Intake Screen Backwash Water.** Units 1-4 cooling water intake structures	Treatment: None. The water is discharged and combined with river water.	Average 0.3 MGD	**38° 32' 09**" N **77° 16' 47"** W
008	**Intake Screenwell Freeze Protection Water.** Non-contact cooling water	Treatment: None. The water is discharged and combined with river water.	Average 2.2 MGD	**38° 32' 10**" N **77° 16' 46"** W

Table 3 details each of the stormwater outfalls and their respective drainage areas. Maps identifying the locations of the stormwater outfalls are in the file with the VPDES permit application. 'MD' indicates the outfall discharges to the Potomac River.

TABLE 3 – Stormwater Outfalls

Outfall	Drainage area
VA#S4	Outfall plugged.
VA#S5	0.7 acres of mostly grass near Unit #5 cooling tower A.
MD#S31	2.2 acres near Unit #5 cooling tower B.
MD#S36	Outfall plugged.

MD#S37	4.5 acres around admin building, maintenance shop, former coal yard service building, and Units #1-4 turbine building.
MD#S38	Outfall plugged.
MD#S39	Outfall plugged.
MD#S41	Outfall plugged.
MD#S42	9.3 acres around perimeter of Unit #5 boiler and dust collector.
MD#S49	Runoff from east side of road surrounding Unit #5 boiler and from No. 6 fuel oil pipe bench.
MD#S50	Runoff from the No. 6 fuel oil pipe bench.
VA#S61	21.8 acres around switchyard, main plant entrance, around combustion turbine, railway west of the switchyard, and maintenance shop.
MD#S77	32.5 acres from area around No. 6 fuel oil pipe bench and from perimeter of oil reheat facilities.
MD#S78, S79, S80, and S94	Four separate areas totaling 2.5 acres from east side of the No. 6 fuel oil tank dyke.
VA#S86	1.5 acres from the northwest employee parking lot.
VA#S93	Several drainage areas including 9.7 acres draining wooded and railroad, and 27.7 acres that include railroad woods and cleared areas (location of old sewage lagoon).
MD#S95	Four drainage areas totaling 32.9 acres around the Oily Waste Treatment Basin, eastern slope of Ash Pond D dam and some railroad tracks.
VA#S104	Three drainage areas totaling 43.8 acres around roadways (Possum Point Road and Cockpit Point Road), wooded and cleared areas.
VA#S107	Discharge predominately groundwater. Permittee has asked that this outfall be deleted during this reissuance.
MD#S113A	28 acres with the old construction debris landfill and another construction debris disposal area. Predominantly natural runoff with no industrial contributions.
MD#S114	9.6 acres around railroad tracks and a wooded area.
MD#S115	Three drainage areas totaling 71.5 acres from wooded and some railroad tracks.
VA#S117	Two areas totaling 331 acres near Outfall 005 and 4 acres south of Possum Point Rd across from a corner of Ash Pond E.
MD#S120	22.4 acres of mostly medium woods and some railways.
MD#S122	Two individual drainage areas of approximately 52.3 acres of mostly woods and some railways.

11. Discharges, Intakes, Monitoring Stations, Other Items in Vicinity of Discharge

TABLE 4		
Discharge	Quantico Creek, UT	Colonial Concrete (VAG110097) ready-mix concrete
Discharge	Quantico Creek	Virginia Concrete (VAG110092) ready-mix concrete.
Discharge	Little Creek, tributary to Quantico Creek	Quantico Marine Corps Base (VA0002151 Outfall 040), Officers Swimming Pool. Filter back wash, pool over flow, and drain water.
AWQM	Quantico Creek (QUA004.46)	Station at the Route #1 Bridge (Data collected monthly since 1972)

12. Solids Management:

During the 2004 modification, solids management for Ash Pond D was addressed. The modification set forth the procedures for solids placement into Ash Pond D. Special Condition (l) in Section 21 of this fact sheet contains a listing of the allowed activities.

Threshold values were developed to characterize the solids being place in Ash Pond D. These threshold values are based on the Toxicity Characteristic Leaching Procedure (TCLP) developed by EPA and adopted by the state of Virginia to classify solid waste into hazardous waste.

EPA developed a characteristic designed to identify wastes likely to leach dangerous concentrations of certain known toxic chemicals into groundwater. In order to predict whether any particular waste is likely to leach chemicals into groundwater in the absence of special restrictions on its handling, EPA first designed a lab procedure that replicates the leaching process and other effects that occur when wastes are buried in a typical municipal landfill. This lab procedure is known as the Toxicity Characteristic Leaching Procedure (TCLP). Using the TCLP on a waste sample creates a liquid leachate that is similar to the liquid EPA would expect to find in the ground near a landfill containing the same waste. Once the leachate is created in the lab, a waste handler must determine whether it contains any of 39 different toxic chemicals above specified regulatory levels. If the leachate sample contains a sufficient concentration of one of the specified chemicals, the waste exhibits the toxicity characteristic (TC). EPA used groundwater modeling studies and toxicity data for a number of common toxic compounds and elements to set these threshold concentration levels. Much of the toxicity data were originally developed under the Safe Drinking Water Act. The Federal regulations describing the characteristic of toxicity are codified at §261.24.

Table 5 details a breakdown of the waste solids being deposited in Ash Pond D.

TABLE 5 – Solids [1]		
Description	**Estimated Volume (yd^3)**	**Frequency**
Filter cake – from water treatment unit for Unit #6	50	Weekly[2]
Dredge spoils and soils from the Possum Point site	50	Twice a year
Dredge spoils from the Quantico Creek watershed	120,000	Once a year[3]
Solids from treatment ponds & storm water management facilities	100	Once a year
Cooling tower basin sludge	200	Once a year
Solids from station floor drains, lift stations, and sumps	100	Once a year

[1] Estimated volumes do not include potential special projects such as coal combustion byproducts in former ash ponds A, B, and C and spoil from Potomac River channel dredging

[2] Weekly when Unit 6 is operating; expected annual volume is approximately 850 cubic yards

[3] Estimated volume reflects average of projected total amount from expected projects through 2006

13. **Material Storage:** See Attachment 3 for current list. This list also states the purpose of the chemical at the power station and the Outfall that is associated with the chemical usage.

14. **Site Inspection:** Performed by Alison Thompson and Tom Faha on August 7, 2006 (Attachment 4).

15. **Receiving Stream Water Quality and Water Quality Standards:**

a) Ambient Water Quality Information

The Virginia Department of Environmental Quality (VA-DEQ) has two ambient water quality monitoring (AWQM) stations at 1AQUA00.2.15 and 1AQUA001.09 on Quantico Creek.

There is also a station in the free flowing portion of Quantico Creek, 1AQUA004.46 located at Route 1, which is approximately 2.5 miles above the Outfall 005 discharge location and about 3.3 miles above Outfall 001 /002 outfall location. This station was active from 1979 to 2001. An average hardness at this station was determined to be 28.5 mg/l using the ambient data collected from July 1987 to February 2001 with 139 values. It is staff's opinion that the free flowing station on Quantico Creek is not representative of the tidal portion of Quantico Creek. A nearby tidal creek, Neabsco Creek, better represents hardness values for the tidal portion. The DEQ ambient monitoring station on Neabsco Creek is 1aNEA000.57, and is located in the tidal portion of the creek. During the last reissuance, an average hardness value of 118 mg/l was determined using the ambient data collected from July 1987 to February 2001 with 149 values. Current data was reviewed and this value is still valid and will be used during this reissuance.

In the 2006 Integrated Report (305(b) and 303(d) reports), the entire estuarine portion of Quantico Creek is noted for aquatic plants (macrophytes) due to there being an insufficient amount of submerged aquatic vegetation (SAV) to fulfill the goal established for the POTTF segment. Also, the estuarine embayment for Quantico Creek is included in the VDH Fish Consumption Advisory for PCBs in fish tissue. Finally, additional monitoring was done as part of the Coastal 2000 survey (estuarine probabilistic monitoring) at station 1AQUA001.09 (in segment VAN-A26E_QUA01A04). The results of the survey showed two additional impairments for the aquatic life use; 1. Sediment Bioasssays for Estuarine and Marine Waters and 2. Estuarine Bioassessments. Also, this Coastal 2000 monitoring showed an exceedance of the Estuarine NOAA-based ER-M Sediment Screening Value (SV) for nickel (51.6 ppm). The nickel exceedance is noted by an observed effect for the aquatic life use. The DEQ Planning Statement is found in Attachment 5.

TMDLs have not been prepared for any of the impairments. The Potomac River PCB TMDL process has started with preliminary public hearings; the TMDL is due September 30, 2007. The Aquatic Plant TMDL is due in 2010 as part of the Chesapeake Bay schedule. The Sediment Bioassays for Estuarine and Marine Waters and Estuarine Bioassessments TMDL is due in 2018.

The Possum Point Power Station was included in the 2004 list of 4B/5E waters because of the compliance schedule for Outfall 005. Since it was determined that the limit was not necessary, the facility was recommended for delisting and was not included in the 2006 IR.

b) Receiving Stream Water Quality Criteria.

Part IX of 9 VAC 25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream Quantico Creek is located within section 06 of the Potomac River Basin, and is a class II (Estuarine waters). At all times, Class II waters must maintain a pH of 6.0-9.0 standard units (S.U.). The dissolved oxygen criteria for Class II waters are presented in the table below.

Table 6 - Dissolved Oxygen Criteria (9 VAC 25-260-185)

Designated Use	**Criteria Concentration/Duration**	**Temporal Application**
Migratory fish spawning and nursery	7-day mean > 6 mg/L (tidal habitats with 0-0.5 ppt salinity)	February 1 – May 31
	Instantaneous minimum > 5 mg/L	
Open-water[1,2]	30-day mean > 5.5 mg/L (tidal habitats with 0-0.5 ppt salinity) 30-day mean > 5 mg/L (tidal habitats with >0.5 ppt salinity)	Year-round
	7-day mean > 4 mg/L	
	Instantaneous minimum > 3.2 mg/L at temperatures < 29°C Instantaneous minimum > 4.3 mg/L at temperatures > 29°C	
Deep-water	30-day mean >3 mg/L	June 1-September 30
	1-day mean > 2.3 mg/L	
	Instantaneous minimum > 1.7 mg/L	
Deep-channel	Instantaneous minimum > 1 mg/L	June 1-September 30

[1]See subsection aa of 9 VAC 25-260-310 for site specific seasonal open-water dissolved oxygen criteria applicable to the tidal Mattaponi and Pamunkey Rivers and their tidal tributaries.

[2]In applying this open-water instantaneous criterion to the Chesapeake Bay and its tidal tributaries where the existing water quality for dissolved oxygen exceeds an instantaneous minimum of 3.2 mg/L, that higher water quality for dissolved oxygen shall be provided antidegradation protection in accordance with section 30 subsection A.2 of the Water Quality Standards.

The Water Quality Standards include temperature standards (maximum hourly temperature change shall not exceed 2°C (9 VAC 25-260-70) and a 3°C temperature rise above the natural temperature (9 VAC 25-260-60).

Ammonia:

During the 2004 modification, ammonia sampling was added to Outfalls 004 and 005 to determine if ammonia limits were necessary due to the chemicals used at the station. Effluent data were below QL levels.

The freshwater, aquatic life Water Quality Criteria for Ammonia are dependent on the instream temperature and pH. Agency guidance uses the 90th percentile temperature and pH values because they best represent the critical design conditions of the receiving stream. The pH and temperature data from the tidal portion of Neabsco Creek (1ANEA000.57) will be used since it has similar characteristics to the tidal portion of Quantico Creek. Staff believes that the data contains a sampling bias since most ambient samples are collected between 10 a.m. and 2 p.m. This time period is the period of the highest photosynthetic activity in a shallow, open embayment such as the mouth Neabsco Creek. During peak photosynthetic activity, the pH rises as carbon dioxide is taken up by the green autotrophic organisms, i.e. algae, present in the embayment (Textbook of Limnology, 3rd edition, G. Cole).

Because of the sampling bias, staff used the 50th percentile pH and temperature values for the calculation of the ammonia as nitrogen Water Quality Criteria. The acute and chronic ammonia as nitrogen freshwater Water Quality Criteria calculations are in Attachment 6. The results are presented in the following table:

Table 7 – Acute and Chronic Ammonia Criteria			
50th percentile pH (s.u.)	50th percentile temperature (°C)	Acute Ammonia as N (mg/L)	Chronic Ammonia as N (mg/L)
8.2	18	58.4	7.1

Metals:
Criteria for some metals are dependent upon hardness. To develop the applicable hardness-based metals criteria staff had to determine an appropriate hardness value for the receiving stream. Following the guidelines set forth in the Staff Guidance memo 00-2011, staff has elected to use the ambient hardness results (average of 118 mg/L) from the nearby Neabsco Creek. This was done due to the fact that:

1) There was no ambient hardness data for the tidal portion of Quantico Creek.
2) The effluent data submitted from the facility was believed to artificially inflated due the nature of the steam electric power generating process that concentrates dissolved solids in the cooling water.
3) Neabsco Creek is a similar tidal creek that is representative of the tidal portion of Quantico Creek.

See Attachment 6 for the Water Quality Criteria.

c) Receiving Stream Special Standards.
Special Standard "b" - *Policy for the Potomac River Embayments* (9 VAC 2-415-10 et seq.). The SWCB adopted the Potomac Embayment Standards (PES) in 1971, which were modified in 1996 to address serious nutrient enrichment problems evident in the Virginia embayments of the Potomac River. These standards apply to sewage treatment plants discharging into all Virginia embayments and their tidal and nontidal tributaries, including their headwaters, of the Potomac River, from the fall line at Chain Bridge in Arlington County to the Route 301 Bridge in King George County.

According to Special Standard "b", the effluent limitations at 9 VAC 25-415-40 do not apply to industrial discharges where BOD and nutrients are not primary pollutants of concern. Therefore, while Special Standard "b" applies to the receiving stream, the effluent limitation at 9 VAC 25-415-40 does not apply to this discharge.

16. Antidegradation:

The State Water Control Board's Water Quality Standards include an antidegradation policy at 9 VAC 25-260-30. All state surface waters are provided one of three levels of antidegradation protection, through the establishment of a water body tier. For Tier 1 (existing use protection), the existing use of the water body and the water quality necessary to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than water quality standards. Significantly lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulation. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

This reissuance involves five discharge points in one creek. A tier determination is required for this creek. It is staff's opinion that Quantico Creek is a Tier 1 water body based on the fact that the current Virginia Power heat rejection limits were determined to meet the natural temperature criteria. This criterion is any rise above the natural temperature shall not exceed 3°C. Staff also believes that this water body is nutrient enriched, although it is not listed in the Virginia Water Quality Standards (9 VAC 25-260-350) based on its similarities to the other Potomac River embayments. Proposed permit limits have been established by determining wasteload allocations which will result in attaining and/or maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development :

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points are equal to or above the quantification level "QL" and the data must represent the exact pollutant being evaluated.

Next the Wasteload Allocation (WLA) is calculated. The WLA values are then compared with available effluent data to determine the need for effluent limitations. According to DEQ Guidance, for discharges in tidal waters, there are two recommended approaches for calculating the wasteload allocations and addressing antidegradation. One approach is to use fresh water flow frequencies and the other is to use tidal dilution factors. In this permit the WLA were calculated using the tidal dilution factor method.

a) Effluent Characteristics.

The previous permit followed the Federal Effluent requirements for Steam Electric Power generating point source category (40 CFR Part 423). The previous effluent limits are valid. The facility has been in compliance with the current permit limitations.

Effluent data from the DMRs and the data submitted as part of the reissuance application were reviewed and are deemed appropriate for analysis.

b) Wasteload Allocations (WLAs)

Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The final effluent limit will be base on the most stringent WLA.

The effluent dilution ratios for tidal situations are based on best professional judgement and guidance memo No. 00-2011, where a steady state mixing zone model cannot be easily employed.

The VPDES Permit Regulation at 9 VAC 25-31-230.D. requires that monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

1) Outfall 001/002, 003, 005

Acute Wasteload Allocations (WLA_A)

Staff does not know what the dilution factor is. It is staff's best professional judgement that a factor of two is appropriate. This factor protects against lethality. The factor of two is derived from the fact that the acute criteria or Criteria Maximum Concentration (CMC) is equal to one half of EPA's Final Acute Value (FAV) for a specific toxic pollutant.

Chronic Wasteload Allocations (WLA_C)

Due to the size of Quantico Creek and the large volume of water that Virginia Power is discharging, it is staff's best professional judgement that a dilution ratio of 2:1 is also appropriate. Because of the shallow depth and confined morphmetry of the embayment, and the large volume of the discharge, staff does not believe the 50:1 dilution ratio recommended in agency guidance and used for these discharges in the past, is appropriate. The factor of two has been used on similar embayments and has been demonstrated to be a reasonable estimate. The Chronic Wasteload Allocation (WLA_C) will be determined by multiplying the chronic water quality criteria by two.

See Attachment 6 for the summary of the calculation of the criteria.

2) Outfalls 004, 007, and 008

Acute Wasteload Allocations (WLA_A)

Due to the fact that Outfall 004 is discharging into tidal estuary waters very close to the main stem of the Potomac River, and Outfalls 007 and 008 discharge directly into the main stem of the Potomac River, the dilution ratio of 2:1 recommended in agency guidance will be used for the acute WLA at these outfalls. The acute Wasteload Allocation (WLA_A) will be determined by multiplying the acute water quality criteria by two.

Chronic Wasteload Allocations (WLA_C)
The dilution ratio of 50:1 recommended in agency guidance (00-2011) will also be used for the chronic WLA at these outfalls. The Chronic Wasteload Allocation (WLA_C) will be determined by multiplying the chronic water quality criteria by fifty.

See Attachment 6 for the summary of the calculation of the criteria.

c) Effluent Limitations and Monitoring
Both water quality based limits and Federal Effluent requirements were applied to each outfall and the most stringent were used for the basis for the final limit.

Metals limits are to be expressed as Total Recoverable, but Virginia's Water Quality Criteria were adopted as Dissolved. During the 2004 modification, the assumption was made that the Total Recoverable and Dissolved values are equal. The evaluations for metals have been determined using the dissolved data, but any limits are expressed at Total Recoverable.

Outfalls 001 – 003
Because the discharge from Outfalls 001 and 002 originates from a common Seal Basin, they are considered identical. The sample must be procured from 002's discharge pipe, at the outfall or after the internal outfall 201 enters the waste stream. A condition was included on the limits page to allow reporting for both discharges on one Discharge Monitoring Report "DMR", designated as Outfall 001/ 002. The flow reported on that DMR should be the total flow from the Seal Basin.

Heat Rejection: The parameter "Heat Rejection" is defined as the rate of heat transfer from a unit's condenser to its circulating water system. It is calculated directly by conservation of mass and energy either across the circulating water system (condenser tube side) or from the turbine exhaust to the hotwell (condenser shell side). Heat Rejection is measured in BTU/Hour. At the site inspection DEQ asked Dominion to confirm and recalculate if necessary the heat rejection numbers for the Units currently in operation at Possum Point. DEQ received the recalculated values on October 20, 2006 and the documentation is in Attachment 7. For Outfall 001/002, Dominion proposed a heat rejection limit for the Units 1 and 2 pumps that are still in use. DEQ reviewed the request, and it is staff's best professional judgment that a heat rejection limit is not appropriate for the pumps. No heat rejection limit for Units 1&2 is proposed for Outfall 001/002 in this reissuance.

DEQ reviewed the heat rejection calculations submitted for Unit 3. The current limit of 5.58×10^8 BTU/hour shall be carried forward with this reissuance.

Intake Temperature: With this reissuance, staff is proposing to add monitoring of the cooling water at the river intake structure. This monitoring shall commence one year after the reissuance date of the permit in accordance with the Schedule of Compliance for Temperature Monitoring (Section 20.c.).

Temperature: With this reissuance, staff is proposing to add monitoring of the effluent temperature. This monitoring shall commence one year after the reissuance date of the permit in accordance with the Schedule of Compliance for Temperature Monitoring (Section 20.c.).

pH: The limits for pH are based on the water quality criteria.

Total Residual Chlorine (TRC): Federal Effluent requirements (40 CFR 423.13(b)(1)) state that once through cooling water discharges shall have a maximum TRC value of 0.2 mg/l. During the last reissuance, the Water Quality based TRC limits were determined to be 0.032 mg/l daily maximum and 0.022 mg/l monthly average. These limits are still valid and will be carried forward with this reissuance. See Attachment 8a for TRC limit calculations. The water quality based limits are more stringent and thus must be used. Monitoring for this parameter is only required during its use.

Metals: The data submitted was evaluated and only Copper at Outfall 003 was found to be of concern. Copper was statistically analyzed for Outfall 003 and the software determined that a limit is necessary (Attachment 8b).

However, this evaluation was made with only one data point that was total recoverable rather than dissolved, so staff is recommending additional monitoring at this time. Semiannual monitoring shall be placed in the permit for Outfall 003. Staff will reevaluate the data to determine if a limit is necessary.

Outfall 004:
pH: Water Quality Criteria states that it shall be a minimum value of 6.0 and a maximum value of 9.0 S.U. and the Federal Effluent requirements (40 CFR 423.12(b)(1)) state that all discharges, except once through cooling water shall be within a range of 6.0 – 9.0 S.U. The pH range is the same for both thus a 6.0 minimum and a 9.0 monthly maximum limit was given at this outfall.

Oil and Grease: Federal Effluent requirement (40 CPR 423.12(b)(3)) states that low volume waste sources have a maximum and monthly average limits. A monthly average of 15 mg/l and monthly maximum of 20 mg/l were given to this outfall as effluent limits.

Total Suspended Solids: Federal Effluent requirement (40 CPR 423.12(b)(3)) states that low volume waste sources have a maximum and monthly average limits. A monthly average of 30 mg/l and a monthly maximum limit of 100 mg/l were given to this outfall as effluent limits.

Metals: The Attachment A data were evaluated and only Copper was determined to be a concern. The three data points were evaluated (Attachment 8c), and no limit is necessary.

Heat Rejection/BTUs: Attachment 7 contains the heat rejection calculations for Unit 4. No changes are proposed to the current maximum limit of 1.9×10^8 BTU/hour and it will be carried forward.

Temperature: With this reissuance, staff is proposing to add monitoring of the effluent temperature. This monitoring shall commence one year after the reissuance date of the permit in accordance with the Schedule of Compliance for Temperature Monitoring (Section 20.c.).

Total Residual Chlorine (TRC): During the last reissuance, Water Quality based TRC limits were determined to be 0.038 mg/l daily maximum and 0.026 mg/l monthly average and are proposed to be carried forward with this reissuance. See Attachment 8d for TRC limit calculations. The water quality based limits are more stringent and thus must be used. Monitoring for this parameter are only required during its use.

Nutrients: During the 2004 modification, DEQ determined that there was an increase in the use of chemicals which contain both ammonia and phosphorus. Quarterly monitoring was included for the following parameters: total nitrogen, TKN, nitrate, nitrite, ammonia, and total phosphorus. Because of the recent initiatives to reduce nutrients to the Chesapeake Bay, staff believes that it is appropriate to continue nutrient monitoring at this outfall.

Storm Water Parameters: Federal Effluent Guidelines (40 CFR 423) requires monitoring of stormwater that is associated with the industrial activities of steam electric power generating facilities. The parameters of concern are Oil and Grease and TSS. Both parameters have been addressed in a previous section of this factsheet, therefore do not need to be added.

Outfall 005:
pH: Water Quality Criteria states that it shall be a minimum value of 6.0 and a maximum value of 9.0 S.U. and the Federal Effluent requirement (40 CFR 423.12(b)(1)) state that all discharges, except once through cooling water shall be within a range of 6.0 – 9.0 S.U. The pH range is the same for both so the limits for this outfall are a 6.0 minimum and a 9.0 monthly maximum limit.

Oil and Grease: Federal Effluent requirement (40 CFR 423.12(b)(4)) states fly ash and bottom ash transport water have a maximum and monthly average limits. A monthly average of 15 mg/l and monthly maximum of 20 mg/l were given to this outfall as effluent limits.

Total Suspended Solids: Federal Effluent requirement (40 CFR 423.12(b)(4)) states fly ash and bottom ash transport water has a maximum and monthly average limits. A monthly average of 30 mg/l and a monthly maximum of 50 mg/l were given to this outfall as effluent limits.

Metals: The data were evaluated and only two metals were determined to be a concern, Arsenic and Nickel. Both were statistically analyzed and it was found that no limit is necessary for either parameter (Attachment 8e).

Nutrients: During the 2004 modification, DEQ determined that there was an increase in the use of chemicals which contain both ammonia and phosphorus. Quarterly monitoring was included for the following parameters: total nitrogen, TKN, nitrate, nitrite, ammonia, and total phosphorus. Because of the recent initiatives to reduce nutrients to the Chesapeake Bay, staff believes that it is appropriate to continue nutrient monitoring at this outfall.

Storm Water Parameters: Federal Effluent Guidelines (40 CFR 423) requires monitoring of stormwater that is associated with the industrial activities of steam electric power generating facilities. The parameters of concern are Oil and Grease and TSS. Both parameters have been addressed in a previous section of this factsheet, therefore do not need to be added.

Attachment A: It is staff's opinion there is a reasonable potential for toxic pollutants to be discharged from Outfall 502 and Ash Pond D into Ash Pond E and therefore Attachment A monitoring will continue to be required on semiannual basis.

Outfalls 007 and 008:
These two outfalls have historically been permitted under a NPDES Permit issued by the State of Maryland. With this reissuance, they will be incorporated into the VPDES permit. These two outfalls serve the Potomac River cooling water intake structures. Water is pumped out of the river and through rotating screens. Detritus and any fish from the river are screened out and backwashed back to the river. Outfall 007 is the main "fish return line." Outfall 008 is used when the freeze protection system is in use in the colder months. These outfalls shall be monitored for flow once per quarter as they have been in the Maryland Permit.

d) Effluent Limitations and Monitoring, Internal Outfalls 201, 202, 501, & 502

Internal Outfall 201:
pH: Federal Effluent requirement (40 CFR 423.12(b)(1)) states that all discharges, except once through cooling water shall be a minimum of 6.0 and a maximum of 9.0 S.U.

Free Available Chlorine: Federal Effluent requirement (40 CFR 423.13(d)(1)) states that a monthly maximum value of 0.5 mg/l and a monthly average limits of 0.2 mg/l for Free Available Chlorine, be to given to cooling water blowdown. Monitoring for this parameter is only required during its use.

Metals: Federal Effluent requirement (40 CFR 423.13(d)(1-3)) states that Total Chromium will have a maximum and monthly average limit of 0.2 mg/l and Total Zinc will have a maximum and monthly average limit of 1.0 mg/l, will be to given to cooling water blowdown.

126 Priority Pollutants: Federal Effluent requirements (40 CFR 423.13(d)(1,3)) states that 126 Priority Pollutants (Appendix A of 40 CFR 423) will be to given to cooling water blowdown. This may be waived if the permittee submits engineering calculations, which demonstrate that the regulated pollutants are not detectable in the final discharge, by the analytical methods in 40 CFR Part 136. Dominion typically submits calculations to waive the monitoring.

Internal Outfall 202:
This outfall also falls under the Federal Effluent requirements (40 CFR 423.15) for new source performance standards. These requirements are already applied at this outfall.

pH: Federal Effluent requirement (40 CFR 423.15(a)) states that all discharges, except once through cooling water shall be a minimum of 6.0 and a maximum of 9.0 S.U.

Free Available Chlorine: Federal Effluent requirement (40 CFR 423.15(j)(1)) states that a monthly average value of 0.2 mg/l and an monthly maximum limits of 0.5 mg/l for Free Available Chlorine, be to given to cooling water blowdown. Because chlorine is rarely used by the permittee in these units, chlorine sampling is only required while chlorinating.

Metals: Federal Effluent requirements (40 CFR 423.15(j)(1)) state that Total Chromium will have a maximum and monthly average limit of 0.2 mg/l and Total Zinc will have a maximum and monthly average limit of 1.0 mg/l, will be to given to cooling water blowdown.

126 Priority Pollutants: Federal Effluent requirement (40 CFR 423.15(j)(1)) states that 126 Priority Pollutants (Appendix A of 40 CFR 423), will be to given to cooling water blowdown. This may be waived if the permittee submit engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR Part 136. Dominion typically submits calculations to waive the monitoring.

Internal Outfall 501:
Oil and Grease: Federal Effluent requirement (40 CFR 423.12(b)(5)) states metals cleaning waste sources have a maximum limit of 20 mg/l and monthly average limit of 15 mg/l.

Total Suspended Solids: Federal Effluent requirement (40 CFR 423.12(b)(5)) states metals cleaning waste sources have a maximum limit of 100 mg/l and monthly average limit of 30 mg/l.

Metals: Federal Effluent requirement (40 CFR 423.12(b)(5)) state that Total Iron will have a maximum and monthly average limit of 1.0 mg/l and Total Copper will have a maximum and monthly average limit of 1.0 mg/l, will be to given to metals cleaning waste.

Internal Outfall 502:
Based on engineering calculations, this internal outfall, for the Oily Waste Pond, receives ~24 MG of storm water a year. VA Power contributes ~30 MG of processed related wastewater from its operation to the Oily Waste Pond annually. Approximately 54 MG enters the Pond on an annual basis.

Total Petroleum Hydrocarbon: It is staff's opinion that the Oily Waste Pond is being used as an oil/water separator. Therefore, the effluent limits used for oil/water separators will apply to the pond. The monthly average limit for total petroleum hydrocarbons (TPH) is 30 mg/l. The monthly maximum shall be 60 mg/L.

18. Antibacksliding:

All limits in this permit are at least as stringent as those previously established in the 2004 modification. Backsliding does not apply to this reissuance.

19.A. Effluent Limitations/Monitoring Requirements: Outfall 001/002

Average Flow is 112.5 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	N/A	N/A	NL	1/M	EST
pH	3	N/A	N/A	6.0 S.U.	9.0 S.U.	1/M	Grab
Total Residual Chlorine#	1a, 1b, 3	0.022 mg/L	N/A	N/A	0.032 mg/L	1/W	Grab
Heat Rejection (Unit 3)*	2, 3, 4	N/A	N/A	N/A	5.58×10^8 BTU/hr	Continuous	Calculated
Intake Temperature (°C)$	2, 3	NL	N/A	N/A	NL	1/D	IS
Temperature (°C)$	2, 3	NL	N/A	NL	NL	1/D	IS
Acute Toxicity – *C. dubia* (TU_a)	2	N/A	N/A	N/A	NL	1/YR	Grab
Chronic Toxicity – *P. promelas* (TU_c)	2	N/A	N/A	N/A	NL	1/YR	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
   a) 40 CFR 423.12(b)(6)
   b) 40 CFR 423.13(b)(1)
2. Best Professional Judgment
3. Water Quality Standards
4. Other (Model, WQM Plan)

MGD = Million gallons per day.
N/A = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
EST = Estimate.

1/M = Once every month.
1/W = Once every week.
1/YR = Once every year.
IS = Immersion Stabilization

EST = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

testing is only required while chlorinating.

* Heat rejection is calculated at the respective condenser units, prior to discharge to the Seal Basin and the final Outfall. The permittee shall submit supplemental data and/or calculations with the monthly DMR to demonstrate compliance with the Heat Rejection Limit.

$ See Section 20.c.for the Schedule of Compliance for the Temperature Monitoring

Federal Effluent Requirements

a) 40 CFR 423.12(b)(6) – BPT Once through cooling water: Maximum and average limits for Free Available Chlorine.

b) 40 CFR 423.13(b)(1) – BAT Plants greater than 25 MW, once through cooling water maximum limit for Total Chlorine.

19.B. Effluent Limitations/Monitoring Requirements: Outfall 201

Average Flow is 3.1 MGD.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	N/A	N/A	NL	1/D-M	EST
pH	1a, 3	N/A	N/A	6.0 S.U.	9.0 S.U.	1/D-W	Grab
Chlorine, Free Available#	1b, 1c	0.2 mg/L	N/A	N/A	0.5 mg/L	1/D-W	Grab
Total Chromium	1c	0.2 mg/L	N/A	N/A	0.2 mg/L	1/D-M	Grab
Total Zinc	1c	1.0 mg/L	N/A	N/A	1.0 mg/L	1/D-M	Grab
126 Priority Pollutants * (Appendix A of 40 CFR 423)	1c	Non-detectable	N/A	N/A	Non-detectable	1/D-Y	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
   a) 40 CFR 423.12(b)(1)
   b) 40 CFR 423.13(b)(7)
   c) 40 CFR 423.13(d)(1-3)
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day.
N/A = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
EST = Estimate.

1/D-M = Once per month in which there is a discharge.
1/D-W = Once per week in which there is a discharge.
1/D-Y = Once per year in which there is a discharge.

EST = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.
Grab = An individual sample collected over a period of time not to exceed 15-minutes.
# - While chlorinating the Unit 5 cooling tower.
* - See Fact Sheet Section 21.h.; permittee can waive testing requirements via submittal of an engineering study.

Federal Effluent Requirements:

a) 40 CFR 423.12(b)(1) – BPT All discharges, except once through cooling water: pH within range of 6.0 - 9.0 s.u..
b) 40 CFR 423.13(b)(7) – BPT Cooling Water Blowdown: Maximum and monthly average limitations for Free Available Chlorine.
c) 40 CFR 423.12(d)(1-3) – BAT Cooling Water Blowdown: Maximum and monthly average limitations for Free Available Chlorine, Total Chromium, Total Zinc, and 126 priority pollutants.

19.C. Effluent Limitations/Monitoring Requirements: Outfall 202

Average Flow is 1.0 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	N/A	N/A	NL	1/D-M	EST
pH	1a, 3	N/A	N/A	6.0 S.U.	9.0 S.U.	1/D-W	Grab
Chlorine, Free Available#	1b, 1c	0.2 mg/L	N/A	N/A	0.5 mg/L	1/D-W	Grab
Total Chromium	1c	0.2 mg/L	N/A	N/A	0.2 mg/L	1/D-M	Grab
Total Zinc	1c	1.0 mg/L	N/A	N/A	1.0 mg/L	1/D-M	Grab
126 Priority Pollutants * (Appendix A of 40 CFR 423)	1c	Non-detectable	N/A	N/A	Non-detectable	1/D-Y	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements:
   a) 40 CFR 423.12(b)(1)
   b) 40 CFR 423.13(b)(7)
   c) 40 CFR 423.13(d)(1-3)
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day.

N/A = Not applicable.

NL = No limit; monitor and report.

S.U. = Standard units.

EST = Estimate.

1/D-M = Once per month in which there is a discharge.

1/D-W = Once per week in which there is a discharge.

1/D-Y = Once per year in which there is a discharge.

EST = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

- While chlorinating the Unit 6 cooling tower.

* - See Fact Sheet Section 21.h.; permittee can waive testing requirements via submittal of an engineering study.

Federal Effluent Requirements:

a) 40 CFR 423.12(b)(1) – BPT All discharges, except once through cooling water: pH within range of 6.0 - 9.0 s.u..

b) 40 CFR 423.13(b)(7) – BPT Cooling Water Blowdown: Maximum and monthly average limitations for Free Available Chlorine.

c) 40 CFR 423.12(d)(1-3) – BAT Cooling Water Blowdown: Maximum and monthly average limitations for Free Available Chlorine, Total Chromium, Total Zinc, and 126 priority pollutants.

19.D. Effluent Limitations/Monitoring Requirements: Outfall 003

Average Flow is 120.6 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	N/A	N/A	NL	1/M	EST
pH	3	N/A	N/A	6.0 S.U.	9.0 S.U.	1/M	Grab
Dissolved Copper	2, 3	NL	N/A	N/A	NL	1/6M	Grab
Total Residual Chlorine#	1a, 1b, 3	0.022 mg/L	N/A	N/A	0.032 mg/L	1/W	Grab
Heat Rejection (Unit 4)*	2, 3, 4	N/A	N/A	N/A	1.14×10^9 BTU/hr	Continuous	Calculated
Temperature (°C)$	2, 3	NL	NA	NL	NL	1/W	IS
Acute Toxicity – *C. dubia* (TU_a)	2	N/A	N/A	N/A	NL	1/YR	Grab
Chronic Toxicity – *P. promelas* (TU_c)	2	N/A	N/A	N/A	NL	1/YR	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
   a) 40 CFR 423.12(b)(6)
   b) 40 CFR 423.13(b)(1)
2. Best Professional Judgment
3. Water Quality Standards
4. Other (Model, WQM Plan)

MGD = Million gallons per day.
N/A = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
EST = Estimate.

1/M = Once every month.
1/W = Once every week.
1/YR = Once every year.
1/6M = Once every six months.
IS = Immersion Stabilization

EST = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

testing is only required while chlorinating the Unit 4 condenser.

* Heat rejection is calculated at the respective condenser unit, prior to discharge to the final Outfall. The permittee shall submit supplemental data and/or calculations with the monthly DMR to demonstrate compliance with the Heat Rejection Limit.

$ See Section 20.c.for the Schedule of Compliance for the Temperature Monitoring

Federal Effluent Requirements:

a) 40 CFR 423.12(b)(6) – BPT Once through cooling water: Maximum and average limits for Free Available Chlorine.

b) 40 CFR 423.13(b)(1) – BAT Plants greater than 25 MW, once through cooling water maximum limit for Total Chlorine.

19.E. Effluent Limitations/Monitoring Requirements: Outfall 004

Average Flow is 1.3 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	N/A	N/A	NL	2/M	EST
pH	1a, 3	N/A	N/A	6.0 S.U.	9.0 S.U.	2/M	Grab
Oil & Grease	1b	15 mg/L	N/A	N/A	20 mg/L	2/M	Grab
Total Suspended Solids	1b, 5	30 mg/L	N/A	N/A	100 mg/L	2/M	Grab
Total Nitrogen (mg/L)	2	NL	N/A	N/A	N/A	1/3M	Grab
TKN (mg/L)	2	NL	N/A	N/A	N/A	1/3M	Grab
Ammonia (mg/L)	2	NL	N/A	N/A	N/A	1/3M	Grab
Nitrate+Nitrite (mg/L)	2	NL	N/A	N/A	N/A	1/3M	Grab
Total Phosphorus (mg/L)	2	NL	N/A	N/A	N/A	1/3M	Grab
Temperature (°C)$	2, 3	NL	N/A	N/A	NL	1/W	IS
Heat Rejection (Unit 6)	2, 3	NL	NL	NL	1.9×10^8 BTU/hr	2/M	Calculated
Total Residual Chlorine	3	0.026 mg/L	N/A	N/A	0.038 mg/L	1/W	Grab
Acute Toxicity – *C. dubia*	2	N/A	N/A	N/A	NL	1/YR	Grab
Acute Toxicity – *P. promelas*	2	N/A	N/A	N/A	NL	1/YR	Grab
Chronic Toxicity – *C. dubia*	2	N/A	N/A	N/A	NL	1/YR	Grab
Chronic Toxicity – *P. promelas*	2	N/A	N/A	N/A	NL	1/YR	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements:
   a) 40 CFR 423.12(b)(1)
   b) 40 CFR 423.13(b)(3)
2. Best Professional Judgment
3. Water Quality Standards
4. Other (Model, WQM Plan)
5. Stormwater Monitoring: industrial activity associated with Steam Electric Power generating facilities.

MGD = Million gallons per day.
N/A = Not applicable.
IS = Immersion stabilization.
NL = No limit; monitor and report.
S.U. = Standard units.
EST = Estimate.

1/W = Once every week.
1/M = Once every month.
2/M = Twice every month.
1/3M = Once every three months.
1/YR = Once every year.

EST = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.
Grab = An individual sample collected over a period of time not to exceed 15-minutes.
$ See Section 20.c.for the Schedule of Compliance for the Temperature Monitoring

Federal Effluent Requirements:

a) 40 CFR 423.12(b)(1) – BPT All discharges, except once through cooling water: pH within range of 6.0 - 9.0 s.u..
b) 40 CFR 423.13(b)(3) – BPT Low volume waste sources: Maximum and monthly average limitations for TSS and Oil & Grease.

19.F. Effluent Limitations/Monitoring Requirements: Outfall 005

Average Flow is 2.0 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	N/A	N/A	NL	2/M	EST
pH	1a, 3	N/A	N/A	6.0 S.U.	9.0 S.U.	2/M	Grab
Oil & Grease	1b, 1c	15 mg/L	N/A	N/A	20 mg/L	2/M	Grab
Total Suspended Solids	1b, 1c, 5	30 mg/L	N/A	N/A	50 mg/L	2/M	Grab
Total Nitrogen (mg/L)	2	NL	N/A	N/A	N/A	1/3M	Grab
TKN (mg/L)	2	NL	N/A	N/A	N/A	1/3M	Grab
Ammonia (mg/L)	2	NL	N/A	N/A	N/A	1/3M	Grab
Nitrate+Nitrite (mg/L)	2	NL	N/A	N/A	N/A	1/3M	Grab
Total Phosphorus (mg/L)	2	NL	N/A	N/A	N/A	1/3M	Grab
Acute Toxicity – *C. dubia*	2	N/A	N/A	N/A	NL	1/YR	Grab
Acute Toxicity – *P. promelas*	2	N/A	N/A	N/A	NL	1/YR	Grab
Chronic Toxicity – *C. dubia*	2	N/A	N/A	N/A	NL	1/YR	Grab
Chronic Toxicity – *P. promelas*	2	N/A	N/A	N/A	NL	1/YR	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements:
   a) 40 CFR 423.12(b)(1)
   b) 40 CFR 423.13(b)(3)
   c) 40 CFR 423.13(b)(4)
2. Best Professional Judgment
3. Water Quality Standards
4. Other (Model, WQM Plan)
5. Stormwater Monitoring: industrial activity associated with Steam Electric Power generating facilities.

MGD = Million gallons per day.
N/A = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
EST = Estimate.

2/M = Twice every month.
1/3M = Once every three months.
1/YR = Once every year.

EST = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.
Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Federal Effluent Requirements:

a) 40 CFR 423.12(b)(1) – BPT All discharges, except once through cooling water: pH within range of 6.0 - 9.0 s.u..
b) 40 CFR 423.13(b)(3) – BPT Low volume waste sources: Maximum and monthly average limitations for TSS and Oil & Grease.
c) 40 CFR 423.12(b)(4) – BPT Fly ash and bottom ash transport water: Maximum and monthly average limitations for TSS and Oil & Grease.

19.G. Effluent Limitations/Monitoring Requirements: Outfall 501

Average Flow is 2.0 MGD.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	N/A	N/A	NL	1/D-M	EST
Oil & Grease	1a	15 mg/L	N/A	N/A	20 mg/L	1/D-M	Grab
Total Suspended Solids	1a	30 mg/L	N/A	N/A	100 mg/L	1/D-M	Grab
Total Iron	1a	1 mg/L	N/A	N/A	1 mg/L	1/D-M	Grab
Total Copper	1a	1 mg/L	N/A	N/A	1 mg/L	1/D-M	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
   a) 40 CFR 423.12(b)(5)
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day.
N/A = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
EST = Estimate.
1/D-M = Once every month in which a discharge occurs.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.
Grab = An individual sample collected over a period of time not to exceed 15-minutes.

Federal Effluent Requirements:

a) 40 CFR 423.12(b)(5) – BPT Metals Cleaning Wastes: Maximum and monthly average limits for TSS, Oil & Grease, Total Copper, and Total Iron.

19.H. Effluent Limitations/Monitoring Requirements: Outfall 502

Average Flow is 0.6 MGD.
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	N/A	N/A	NL	2/M	EST
Total Petroleum Hydrocarbons	2	30 mg/L	N/A	N/A	60 mg/L	2/M	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day.
N/A = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
EST = Estimate.
2/M = Twice every month.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.
Grab = An individual sample collected over a period of time not to exceed 15-minutes.

19.I. Effluent Limitations/Monitoring Requirements: Outfall 007

Average Flow is 0.3 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	N/A	N/A	NL	1/3M	EST

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day.
N/A = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
EST = Estimate.
1/3M = Once every three months

EST = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.
Grab = An individual sample collected over a period of time not to exceed 15-minutes.

19.J. Effluent Limitations/Monitoring Requirements: Outfall 008

Average Flow is 2.2 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	N/A	N/A	NL	1/3M	EST

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards

MGD = Million gallons per day.
N/A = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
EST = Estimate.
1/3M = Once every three months

EST = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.
Grab = An individual sample collected over a period of time not to exceed 15-minutes.

19.K. Effluent Limitations/Monitoring Requirements: Groundwater Monitoring

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to manage pollutants at Ash Pond D and Ash Pond E. The groundwater shall be limited and monitored at the observation well by the permittee as specified below.

Observation wells: Ash Pond D Stratum D ED-1, ED-3, ED-9R, ED-15, ED-24R*, ED-32
Ash Pond E Stratum D ES- 1, ES-3a, ES-4

PARAMETER	GROUNDWATER MONITORING		MONITORING REQUIREMENTS	
	Limitations	Units	Frequency	Sample Type
Static Water Level (mean sea level)	NL	Feet	Semiannually	Measurement
pH	NL	Standard Units	Semiannually	Grab
Specific Conductivity	NL	Umhos/cm	Semiannually	Grab
Hardness	NL	As $CaCO_3$, mg/L	Semiannually	Grab
Chlorides	NL	mg/L	Semiannually	Grab
Fluoride	NL	mg/L	Semiannually	Grab
Sodium	NL	mg/L	Semiannually	Grab
Potassium	NL	mg/L	Semiannually	Grab
Sulfate	NL	mg/L	Semiannually	Grab
Total Organic Carbon	NL	mg/L	Semiannually	Grab
Temperature	NL	°C	Semiannually	Grab
Dissolved Arsenic	NL	ug/L	Semiannually	Grab
Dissolved Barium	NL	ug/L	Semiannually	Grab
Dissolved Cadmium	NL	ug/L	Semiannually	Grab
Dissolved Copper	NL	ug/L	Semiannually	Grab
Dissolved Iron	NL	ug/L	Semiannually	Grab
Dissolved Mercury	NL	ug/L	Semiannually	Grab
Dissolved Lead	NL	ug/L	Semiannually	Grab
Dissolved Nickel	NL	ug/L	Semiannually	Grab
Dissolved Manganese	NL	ug/L	Semiannually	Grab
Dissolved Selenium	NL	ug/L	Semiannually	Grab
Dissolved Silver	NL	ug/L	Semiannually	Grab
Dissolved Vanadium	NL	ug/L	Semiannually	Grab
Dissolved Zinc	NL	ug/L	Semiannually	Grab
Phenol	NL	mg/L	Semiannually	Grab

NL = No Limit: monitor and report.
Grab = An individual sample collected over a period of time not to exceed 15-minutes or time needed to collect proper sample amount.

*By letter dated October 9, 2006, Dominion notified DEQ that groundwater monitoring well ED-24 was damaged beyond repair, so they installed a new well designated as ED-24R. The documentation is filed in the 2006 DMR file for this facility.

19.L. Effluent Limitations/Monitoring Requirements: Groundwater Monitoring

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to manage pollutants at Ash Pond D and Ash Pond E. The groundwater shall be limited and monitored at the observation well by the permittee as specified below.

Observation wells: Ash Pond D and E
Stratum B ED-4, ED-5, ED-17
Stratum E ED-31
Stratum F ED- 26, ED-33

PARAMETER	GROUNDWATER MONITORING		MONITORING REQUIREMENTS	
	Limitations	Units	Frequency	Sample Type
Static Water Level (mean sea level)	NL	Feet	Annually	Measurement
pH	NL	Standard Units	Annually	Grab
Specific Conductivity	NL	Umhos/cm	Annually	Grab
Hardness	NL	As $CaCO_3$, mg/L	Annually	Grab
Chlorides	NL	mg/L	Annually	Grab
Fluoride	NL	mg/L	Annually	Grab
Sodium	NL	mg/L	Annually	Grab
Potassium	NL	mg/L	Annually	Grab
Sulfate	NL	mg/L	Annually	Grab
Total Organic Carbon	NL	mg/L	Annually	Grab
Temperature	NL	°C	Annually	Grab
Dissolved Arsenic	NL	ug/L	Annually	Grab
Dissolved Barium	NL	ug/L	Annually	Grab
Dissolved Cadmium	NL	ug/L	Annually	Grab
Dissolved Copper	NL	ug/L	Annually	Grab
Dissolved Iron	NL	ug/L	Annually	Grab
Dissolved Mercury	NL	ug/L	Annually	Grab
Dissolved Lead	NL	ug/L	Annually	Grab
Dissolved Nickel	NL	ug/L	Annually	Grab
Dissolved Manganese	NL	ug/L	Annually	Grab
Dissolved Selenium	NL	ug/L	Annually	Grab
Dissolved Silver	NL	ug/L	Annually	Grab
Dissolved Vanadium	NL	ug/L	Annually	Grab
Dissolved Zinc	NL	ug/L	Annually	Grab
Phenol	NL	mg/L	Annually	Grab

NL = No Limit: monitor and report.
Grab = An individual sample collected over a period of time not to exceed 15-minutes or time needed to collect proper sample amount.

19.M. Effluent Limitations/Monitoring Requirements: Groundwater Monitoring

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date, the permittee is authorized to manage pollutants at Oily Waste Pond. The groundwater shall be limited and monitored at the observation well by the permittee as specified below.

Observation wells: Oily Waste Pond OWB-1, OWB-2, OWB-3, OWB-4, OWB-5

PARAMETER	GROUNDWATER MONITORING		MONITORING REQUIREMENTS	
	Limitations	Units	Frequency	Sample Type
Static Water Level (mean sea level)	NL	Feet	Semiannually	Measurement
pH	NL	Standard Units	Semiannually	Grab
Specific Conductivity	NL	Umhos/cm	Semiannually	Grab
Hardness	NL	As $CaCO_3$, mg/L	Semiannually	Grab
Chlorides	NL	mg/L	Semiannually	Grab
Fluoride	NL	mg/L	Semiannually	Grab
Sodium	NL	mg/L	Semiannually	Grab
Potassium	NL	mg/L	Semiannually	Grab
Sulfate	NL	mg/L	Semiannually	Grab
Total Organic Carbon	NL	mg/L	Semiannually	Grab
Temperature	NL	°C	Semiannually	Grab
Dissolved Arsenic	NL	ug/L	Biannually	Grab
Dissolved Barium	NL	ug/L	Biannually	Grab
Dissolved Cadmium	NL	ug/L	Biannually	Grab
Dissolved Copper	NL	ug/L	Biannually	Grab
Dissolved Iron	NL	ug/L	Biannually	Grab
Dissolved Mercury	NL	ug/L	Biannually	Grab
Dissolved Lead	NL	ug/L	Biannually	Grab
Dissolved Nickel	NL	ug/L	Biannually	Grab
Dissolved Manganese	NL	ug/L	Biannually	Grab
Dissolved Selenium	NL	ug/L	Biannually	Grab
Dissolved Silver	NL	ug/L	Biannually	Grab
Dissolved Vanadium	NL	ug/L	Biannually	Grab
Dissolved Zinc	NL	ug/L	Biannually	Grab
Phenol	NL	mg/L	Semiannually	Grab
Total Petroleum Hydrocarbons	NL	mg/L	Semiannually	Grab
Benzene	NL	mg/L	Semiannually	Grab
Ethylbenzene	NL	mg/L	Semiannually	Grab
Toluene	NL	mg/L	Semiannually	Grab
Total Xylenes	NL	mg/L	Semiannually	Grab

NL = No Limit: monitor and report.
Grab = An individual sample collected over a period of time not to exceed 15-minutes or time needed to collect proper sample amount.

20. Other Permit Requirements :

a) Part I.B. of the permit contains quantification levels and compliance reporting instructions.
9 VAC 25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9 VAC 25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

b) Part I.C. of the permit details the requirements for Toxics Management Program.
The VPDES Permit Regulation at 9 VAC 25-31-210 requires monitoring and 9 VAC 25-31-220.D. requires limitations in the permit to provide for and assure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act.

DEQ requires that discharges, which demonstrate the potential of toxicity, should be monitored to determine the extent, if any, that the effluent is toxic. DEQ also require continued monitoring for toxicity to assure that changes in influent or treatment processes that occur with time do not contribute to toxicity. Bioassay toxicity testing is required to evaluate the overall synergistic effects of pollutants in the effluent.

The Possum Point Power Station has been monitoring for acute and chronic toxicity since the permit was first issued in April 1985. The program required annual acute and chronic toxicity testing for outfall 004 and 005. The reissued permit in May 1991 required the facility to perform quarterly acute and chronic toxicity test for the period of one year on Outfall 001, 002, and 003. Following the successful completion of the quarterly testing the facility was to begin annual monitoring. A summary of the recent toxicity results can be found in Attachment 9.

The following will be the toxicity schedule in the reissued permit:

1) **Outfall 001/ 002**
The outfall will have a decrease in toxicity testing from semiannual to annual. No problems have been noted with the toxicity testing at this outfall due to waste streams from the operations of Unit 6.
2) **Outfall 003**
The annual toxicity testing will remain unchanged at this outfall.
3) **Outfall 004**
This outfall will have a decrease in toxicity testing from quarterly to annual. The toxicity testing has passed all the decision criteria even with the added waste streams from the operations of Unit 6.
4) **Outfall 005**
This outfall will have a decrease in toxicity testing from quarterly to annual. The toxicity testing has passed all the decision criteria even with the dredge material in Ash Pond D.

c) Part I.D. details the requirements of the Schedule of Compliance for Temperature Monitoring for Outfalls 001/002, 003 and 004
The VPDES Permit Regulation, 9 VAC 25-31-250 allows use of Compliance Schedules to allow facilities sufficient time for upgrades to meet newly established effluent limits or monitoring. The permit contains newly established monitoring for intake temperature for Outfall 001/002 and effluent temperature for Outfalls 001/002, 003, and 004. Because of the logistics for monitoring the submerged outfalls and due to the fact that the facility shall be submitting a proposal for determining the thermal mixing zone of the receiving waters, a year long compliance schedule is proposed for this reissuance The permittee shall begin the monitoring prescribed in Table 10 one year from the reissuance date of the permit.

Table 10 – Temperature Monitoring	
Outfall	**Monitoring to begin one year from the reissuance date of the permit**
Outfall 001/002	Temperature (°C) of the water at the intake structure Effluent Temperature (°C)
Outfall 003	Effluent Temperature (°C)
Outfall 004	Effluent Temperature (°C)

d) Part I.G. details the requirements of a Storm Water Management Plan.
40 CFR 122.26(b)(14)(vii) identifies stream electric power generating facilities are subject to regulatory requirements for point source discharges of storm water. Virginia Power has identified three point source discharges of storm water associated with industrial activity. The Clean Water Act requires that all NPDES permits for point source storm water discharges associated with industrial activity establish Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) requirements. DEQ has established BAT/BCT requirements for discharges of storm water runoff associated with industrial activity. BAT/BCT requirements are established by requiring the permittee to develop and implement a Storm Water Pollution Prevention Plan. Based on EPA guidance, the Storm Water Pollution Prevention Plan consists of the following major components: formation of a pollution prevention team; description of potential pollutant sources; implementation of measures and controls to prevent contamination of storm water (Best Management Practices); a comprehensive site compliance evaluation.

e) Permit Section Part I.F. details the requirements of a Groundwater Monitoring Program
Groundwater Monitoring Review. The Remediation Division of DEQ-NVRO has reviewed the annual reports and based on the data, the ground water is impacted by the constituents from the fly ash ponds. Zinc is the most predominant metal detected in the down gradient wells. It is staff's opinion that the site characterization needs to be reviewed for the groundwater around ash pond D and ash pond E and updated if necessary.

1) Groundwater Monitoring (Permit Section Part I.F.1.) Virginia Power is currently sampling under a ground water monitoring plan, which was approved on April 2, 1996. If Virginia Power changes or modifies their sampling, they would be responsible for updating their ground water monitoring plan and submitting the changes DEQ-NVRO within 180 days.

   Groundwater monitoring is required in twenty wells in order to assess any impact to groundwater from the continued use of Ash Ponds D & E, Metals Waste Ponds and Oily Waste Pond. Three aquifers (Strata B, D and F) may potentially be impacted. The previous aquifers are separated by nearly impermeable aquifers (Strata A, C and E). The groundwater annual report shall include a review of the groundwater quality on the basis of background quality, water Quality Standards, and statistical deviation thereof, as applicable with the anti-degradation Policy for Groundwater.

2) Site Characterization Report for the Oily Waste Pond (Permit Section Part I.F.3.) It is staff's opinion that there is the potential for groundwater contamination around the Oily Waste Pond. A review of the data indicates that the problem is not getting worse, but is also not improving. Should data warrant, DEQ shall require a Site Characterization Report. The report shall include the following (at a minimum): spatial extent and severity of the contamination with concentration depicted by isoconcentration maps, the cause of the contamination, identify both human health and environmental receptors, assess risk to each receptors, and analysis of remediation alternatives.

3) Corrective Action for the Oily Waste Pond (Permit Section Part I.F.4) Following a review and approval of a Site Characterization Report, a Corrective Action Plan may required by DEQ-NVRO. This corrective action plan will be due within 180 days upon notification by DEQ-NVRO. The permittee shall put into practice the corrective action plan within 180 days after it as been approved by DEQ-NVRO.

21. Other Special Conditions (Part I.E.):

a) O&M Manual Requirement.
Within 180 days of the effective date of this permit, the permittee shall submit for approval an Operations and Maintenance (O&M) Manual or a statement confirming the accuracy and completeness of the current O&M Manual to the Department of Environmental Quality, Northern Virginia Regional Office (DEQ-NVRO). Future changes to the facility must be addressed by the submittal of a revised O&M Manual within 90 days of the changes. Non-compliance with the construction and operation permits or the O&M Manual shall be deemed a violation of the permit.

b) Notification Levels.
The permittee shall notify the Department as soon as they know or have reason to believe:
1) That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in this permit, if that discharge will exceed the highest of the following notification levels:
   (a) One hundred micrograms per liter;
   (b) Two hundred micrograms per liter for acrolein and acrylonitrile; five hundred micrograms per liter for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter for antimony;
   (c) Five times the maximum concentration value reported for that pollutant in the permit application; or
   (d) The level established by the Board.
2) That any activity has occurred or will occur which would result in any discharge, on a nonroutine or infrequent basis, of a toxic pollutant which is not limited in this permit, if that discharge will exceed the highest of the following notification levels:
   (a) Five hundred micrograms per liter;
   (b) One milligram per liter for antimony;
   (c) Ten times the maximum concentration value reported for that pollutant in the permit application; or

The level established by the Board.

c) Materials Handling and Storage.
The VPDES Permit Regulation at 9 VAC 25-31-50.A. prohibits the discharge of any wastes into State waters unless authorized by permit. The Code of Virginia at §§62.1-44.16 and 621-44.17 authorizes the State Water Control Board to regulate the discharge of industrial waste or other waste which would threaten public health or safety, interfere with or be incompatible with treatment works or water use. Section 301 of the Clean Water Act prohibits the discharge of any pollutant unless it complies with specific sections of the Act.16.

d) Prohibition of Chemical Additives.
Chemical additives may not be used in the non-contact cooling water without prior notification to the Department of Environmental Quality, Northern Regional Office (DEQ-NVRO). The chemical additives may be toxic or other wise violates the receiving stream water quality standards. Upon notification, the Regional Office can determine if this activity will warrant a modification to the permit.

e) Polychlorinated Biphenyl.
40 CFR 423.12(b)(2) and 40 CFR 423.13(a) requires that there shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid from this facility.

f) Water Quality Criteria Reopener.
The VPDES Permit Regulation at 9 VAC 25-31-220.D. requires establishment of effluent limitations to ensure attainment/maintenance of receiving stream water quality criteria. Monitoring-only requirements are proposed at Attachment A of the proposed permit. Should data collected and submitted indicate the need for limits to ensure protection of water quality criteria, the permit may be modified or alternately revoked and reissued to impose such water quality-based limitations.

g) Water Quality Criteria Monitoring.

The State Water Control Law at §62.1-44.21 authorizes the Water Control Board to request information needed to determine a discharge's impact on State waters. To ensure Water Quality Standards are maintained, the permittee is required to analyze the Outfall 004 and 005 effluent for the parameters specified in Attachment A of the VPDES Permit. Where a parameter has more than one or no analytical method specified, the permittee shall select a sampling protocol (e.g., "clean sampling techniques") and an analytical method capable of achieving the specified quantification level (QL) or specific target value (STV) for the parameter, if any. Monitoring shall be sampled annually and the first sampling shall be completed one year from the permit's effective date. Using Attachment A as the reporting form, the data shall be submitted annually. Further, the permittee shall ensure that sampling and analytical personnel conform to all QA/QC procedures when performing the Attachment A sampling.

h) 126 Priority Pollutants for Outfalls 201 and 202.

40 CFR 423.13(d)(3) requires that the permittee has non-detectable amounts of the 126 priority pollutants listed in Appendix A to 40 CFR 423 in their discharges. This pertains to chemicals added for cooling tower maintenance, in the blowdown discharge water. Sampling for these pollutants (except total chromium and total zinc) from the discharge point shall be conducted annually when there is a discharge.
40 CFR 423.13(d)(1) states that the monitoring requirement may be waived if the permittee submits engineering calculations, which demonstrate that the regulated pollutants are not detectable in the final discharge, by the analytical methods in 40 CFR 136.

i) In-stream Monitoring.

This mixing zone study is a temperature indicator for Quantico Creek. The current locations are found on a map in Attachment 10. The current Quantico Creek Mixing Zone was approved by DEQ-NVRO in the mid-1980s. When Unit 6 came online in 2003, the permittee evaluated the potential for a thermal impact from this unit. It was concluded that the impact was insignificant and "will not result in a violation of the station's existing mixing zone." It is staff's best professional judgment that with Units 1 and 2 offline, the boundaries of the mixing zone have changed and that the mixing zone can be reduced in size. With this reissuance, the mixing zone boundaries are to be reestablished. A proposal for the temperature study is to be submitted to the Department of Environmental Quality, Northern Virginia Regional Office (DEQ-NVRO) within one year of the reissuance date of the permit. Within four years of the reissuance date, a final report and supporting documentation shall be submitted for review to DEQ-NVRO and shall include a map showing the new monitoring locations. The facility shall continue to use the current approved locations until any changes are reviewed and approved by DEQ-NVRO.

Monitoring of the thermal mixing zone shall take place twice a year, once in the month of July and once in the month of February. The monitoring results shall be presented as a temperature plot with 3-degree Celsius isotherms and will be taken as near to full plant operating conditions as reasonably possible. The results of the July monitoring shall be submitted on or before October 31 of each year. The results of the February monitoring shall be submitted on or before May 31.

j) Debris Collection.

Wastes such as solids, sludges, or other pollutants removed from or resulting from treatment or control of wastewaters, or facility operations, including all debris collected on the intake trash racks, shall be disposed of in a manner to prevent any removed substances or runoff from such substances from entering or from being placed in a location where they may enter the waters of the State.

k) Solids in Ash Pond D

1) Ash Pond D may be used as a repository for dredge spoil material and residuals removed from facilities, areas, and systems related to operation and maintenance of Possum Point Power Station. These materials and residuals include :
   (a) Solids from VPDES treatment ponds and storm water management facilities;
   (b) Solids from old/closed VPDES treatment ponds (Ash Pond A, B and C).
   (c) Solids from station floor drains, lift stations, and sumps;
   (d) Water treatment plant filter cake and cooling tower basin sludge;

(e) Soil and fines from station beautification and land restoration projects, including the coal pile area, deicing grit, abrasives, and inert cleanup debris such as surplus soil, rock, and gravel;
(f) Sand/silt/sediment in the Potomac River and Quantico Creek within and adjacent to cooling water intake structures, outfall structures, oil barge berths, shoreline revetments, boat ramp, transportation structures, and navigation-related channels and structures.

2) Ash Pond D may be used as a repository for dredge spoil material that is not related to operations at Possum Point Power Station provided the material originated from the Potomac River or Quantico Creek or public bodies of water in the Quantico Creek watershed meeting the definition of state waters in Virginia. The following guideline must be followed:

(a) Dominion shall provide written notice to the Department of Environmental Quality-Northern Virginia Regional Office (DEQ-NVRO) at least 30 days prior to the placement of any dredge spoil material in Ash Pond D. This notice shall include as a minimum the following information:

- Sampling tests and laboratory results (See 3 below)
- Copies of all permits or regulatory authorizations required for the project,
- Project schedule dates,
- Method of placement,
- Original location of material,
- Type and volume of material,
- Name, address, and telephone number of dredging contractor (for placement of dredge spoil material) or station contact (for placement of station residuals).

(b) Specific approval by the DEQ-NVRO is not required for a placement project but the DEQ-NVRO shall have the right to request additional information or halt any noticed activity. If the placement project is not halted by the DEQ-NVRO within 30 days of receipt of the above notice, the project is deemed authorized.

3) Sampling Requirements.
(a) One or more representative samples of the material proposed for placement in Ash Pond D shall be obtained and tested. All parameters limited in Attachment B of the permit (see Attachment 16) shall be sampled. The permittee shall use Attachment B has a reporting form which will be submitted to DEQ-NVRO at least 30 days prior to placement in Ash Pond D. If the measured constituents in the sample exceed any respective threshold levels listed in Attachment B, the material shall not be placed in Ash Pond D.
(b) Materials and residuals related to routine station operations identified Part I. E. a. shall be tested prior to initial placement under this protocol and if station processes have not materially changed, further testing is not required.
(c) If the volume of the material proposed for placement in Ash Pond D exceeds 50,000 cubic yards per project, a second representative sample of the material shall be obtained and tested using Attachment B. Thereafter, each additional 50,000 cubic yards of material per project shall be tested using Attachment B. If the measured constituent in the sample exceeds any respective threshold levels listed in Attachment B, the material shall not be placed in Ash Pond D.
(d) The above notice requirements shall not apply to projects involving the placement of material less than 1,000 cubic yards. The above testing and notice requirements for any placement activity may be waived in the event of declared public emergency conditions or by consent of the DEQ-NVRO.

4) The placement of any material in Ash Pond D shall not be incompatible with the Ash Pond D liner system or cause a violation of the VPDES permit requirements applicable to Outfall 005 at Ash Pond E.

5) Dominion shall retain records relating to the placement event for minimum of three years and comply with the requirements of Part II.B.2 of the subject permit.

l) 316(b) of the Clean Water Act.
The facility includes a cooling water intake structure governed by §316(b) of the Clean Water Act which requires that the location, design, construction and capacity of the cooling water intake structures reflect the "best technology available for minimizing adverse environmental impact". The *[North Anna – May, 1985; Yorktown – April, 1979; Possum Point – December, 1976]* environmental report on impingement and entrainment studies conducted at the facility indicated minimal or no adverse environmental impact. The special condition requires continued compliance with §316(b) and submittal of new data that was recently collected in response to EPA's Phase II requirements. Collected data and any changes to the intake structures or conditions will be reevaluated at each reissuance to monitor continued compliance with the requirement. The condition also includes a reopener, should further 316(b) related conditions become necessary once the EPA Phase II rule is finalized or a new BPJ determination is required.

m) TMDL Reopener.
This special condition is to allow the permit to reopened if necessary to bring it in compliance with any applicable TMDL that may to developed and approved for the receiving stream. See Fact Sheet Section 26 for further discussion.

Permit Section Part II. Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

22. Changes to the Permit from the Previously Issued Permit:

Table 11 outlines changes to the permit during this 2007 reissuance:

Table 11 - 2007 Reissuance Changes

- The Heat Rejection limit for Units 1 and 2 was removed since these units were taken offline.
- The permittee shall submit supplemental data and calculations to demonstrate compliance with the Heat Rejection limits of Outfalls 001/002, 003 and 004.
- A Schedule of Compliance for Temperature Monitoring at Outfalls 001/002, 003, and 004 was added to the permit to allow the facility time to establish monitoring locations for each of the outfalls.
- A TMDL Reopener was added to the permit.
- Outfalls 007 and 008 were added to the permit. They were previously permitted under a NPDES permit issued by the State of Maryland.
- A special condition for Section 316(b) of the Clean Water Act was added.
- Toxicity monitoring is now on an annual basis for Outfalls 001/002, 003, 004, and 005. All toxicity samples were changed to grabs.
- The Mixing Zone Special Condition was updated to require the facility to reestablish the mixing zone.
- Dissolved Copper monitoring for Outfall 003 was added.
- Quantification levels for copper and zinc were updated.
- Outfalls 004 and 005 have Nitrate+Nitrite monitoring in lieu of separate analyses.
- Groundwater monitoring well ED-24 was damaged beyond repair, so it was removed from the permit. A new well designated as ED-24R replaced it.
- Selenium monitoring was removed from Outfall 005. The limit was removed during the 2004 modification, but monitoring remained through the term of the permit.
- A TPH monthly maximum limit of 60 mg/L was added for Outfall 502.
- The quarterly groundwater monitoring was reduced to semiannual monitoring.
- Update language for the Groundwater Special Condition.

Table 12 outlines changes to the permit during the 2004 modification:

Table 12 - 2004 Modification Changes

- Removal of the Selenium compliance schedule and monthly average limitation of 15 ug/l. Monthly monitoring will still be effect for the term of the permit.
- Removal of the compliance schedules for TRC limitation. They are completed.
- Additions of nutrient monitoring at Outfalls 004 and 005.
- Additional Attachment A monitoring for Outfall 004.
- Increase in Attachment A monitoring frequency for Outfall 005.
- Increase TMP monitoring on Outfall 004 and 005 with two organisms for both chronic and acute tests.
- Addition of chlorine and temperature limitation on Outfall 004.
- Outfall 503 has been removed which regulated a CWT facility and similarly, the CWT compliance schedule has been removed. A&A Environmental has left the Possum Point facility site.
- Addition of special condition for solid placement into Ash Pond D. Also sampling parameter list and threshold values listed in Attachment B.
- Removal of special condition for Outfall 004. The condition was associated with the coal piles, which have been removed.
- Language change to O&M special condition.

23. Variances/Alternate Limits or Conditions. None.

24. Public Notice Information:

First Public Notice Date: Second Public Notice Date:

Public Notice Information is required by 9 VAC 25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: Northern Virginia DEQ Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703) 583-3834, althompson@deq.virginia.gov.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing if public response is significant. Requests for public hearings shall state the reason why a hearing is requested, the nature of the issues proposed to be raised in the public hearing and a brief explanation of how the requester's interests would be directly and adversely affected by the proposed permit action. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given.

25. 303 (d) Listed Stream Segments and Total Max. Daily Loads (TMDL):

In the 2006 Integrated Report (305(b) and 303(d) reports), the entire estuarine portion of Quantico Creek is noted for aquatic plants (macrophytes) due to there being an insufficient amount of submerged aquatic vegetation (SAV) to fulfill the goal established for the POTTF segment. Also, the estuarine embayment for Quantico Creek is included in the VDH Fish Consumption Advisory for PCBs in fish tissue. Finally, additional monitoring was done as part of the Coastal 2000 survey (estuarine probabilistic monitoring) at station 1AQUA001.09 (in segment VAN-A26E_QUA01A04). The results of the survey showed two additional impairments for the aquatic life use; 1. Sediment Bioasssays for Estuarine and Marine Waters and 2. Estuarine Bioassessments. Also, this Coastal 2000 monitoring showed an exceedance of the Estuarine NOAA-based ER-M Sediment Screening Value (SV) for nickel (51.6 ppm). The nickel exceedance is noted by an observed effect for the aquatic life use.

TMDLs have not been prepared for any of the impairments. The Potomac River PCB TMDL process has started with preliminary public hearings; the TMDL is due September 30, 2007. The Aquatic Plant TMDL is due in 2010 as part of the Chesapeake Bay schedule. The Sediment Bioassays for Estuarine and Marine Waters and Estuarine Bioassessments TMDL is due in 2018.

The Possum Point Power Station was included in the 2004 list of 4B/5E waters because of the compliance schedule for Outfall 005. Since it was determined that the limit was not necessary, the facility was recommended for delisting and was not included in the 2006 IR.

A TMDL Reopener will be included with this reissuance. See Fact Sheet Section 21.m.

26. Other:

- EPA Checklist see Attachment 11.

NPDES PERMIT RATING WORK SHEET

[X] Regular Addition
[ ] Discretionary Addition
[ ] Score change, but no status Change
[ ] Deletion

VPDES NO. : VA0002071

Facility Name: Dominion (Virginia Electric and Power Company – Possum Point Power Station
City / County: Dumfries / Prince William County
Receiving Water: Quantico Creek
Reach Number:

Is this facility a steam electric power plant (sic =4911) with one or more of the following characteristics?

1. Power output 500 MW or greater (not using a cooling pond/lake)
2. A nuclear power Plant
3. Cooling water discharge greater than 25% of the receiving stream's 7Q10 flow rater

[X] Yes; score is 600 (stop here) [ ] NO; (continue)

Is this permit for a municipal separate storm sewer serving a population greater than 100,000?

[ ] YES; score is 700 (stop here)
[X] NO; (continue)

FACTOR 1: Toxic Pollutant Potential

PCS SIC Code: Primary Sic Code: 4911 Other Sic Codes:

Industrial Subcategory Code: (Code 000 if no subcategory)

Determine the Toxicity potential from Appendix A. Be sure to use the TOTAL toxicity potential column and check one)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
[ ] No process waste streams	0	0	[ ] 3.	3	15	[ ] 7.	7	35
[ ] 1.	1	5	[ ] 4.	4	20	[ ] 8.	8	40
[ ] 2.	2	10	[ ] 5.	5	25	[ ] 9.	9	45
			[ ] 6.	6	30	[ ] 10.	10	50

Code Number Checked: NA

Total Points Factor 1: NA

FACTOR 2: Flow/Stream Flow Volume (Complete either Section A or Section B; check only one)

Section A – Wastewater Flow Only considered

Wastewater Type (see Instructions)			Code	Points
Type I:	Flow < 5 MGD	[ ]	11	0
	Flow 5 to 10 MGD	[ ]	12	10
	Flow > 10 to 50 MGD	[ ]	13	20
	Flow > 50 MGD	[ ]	14	30
Type II:	Flow < 1 MGD	[ ]	21	10
	Flow 1 to 5 MGD	[ ]	22	20
	Flow > 5 to 10 MGD	[ ]	23	30
	Flow > 10 MGD	[ ]	24	50
Type III:	Flow < 1 MGD	[ ]	31	0
	Flow 1 to 5 MGD	[ ]	32	10
	Flow > 5 to 10 MGD	[ ]	33	20
	Flow > 10 MGD	[ ]	34	30

Section B – Wastewater and Stream Flow Considered

Wastewater Type (see Instructions)	Percent of Instream Wastewater Concentration at Receiving Stream Low Flow		Code	Points
Type I/III:	< 10 %	[ ]	41	0
	10 % to < 50 %	[ ]	42	10
	> 50%	[ ]	43	20
Type II:	< 10 %	[ ]	51	0
	10 % to < 50 %	[ ]	52	20
	> 50 %	[ ]	53	30

Code Checked from Section A or B: NA

Total Points Factor 2: NA

NPDES PERMIT RATING WORK SHEET

FACTOR 3: Conventional Pollutants

(only when limited by the permit)

A. Oxygen Demanding Pollutants: (check one) ☐ BOD ☐ COD ☐ Other: _____

Permit Limits: (check one)	Code	Points
☐ < 100 lbs/day	1	0
☐ 100 to 1000 lbs/day	2	5
☐ > 1000 to 3000 lbs/day	3	15
☐ > 3000 lbs/day	4	20

Code Number Checked: NA

Points Scored: NA

B. Total Suspended Solids (TSS)

Permit Limits: (check one)	Code	Points
☐ < 100 lbs/day	1	0
☐ 100 to 1000 lbs/day	2	5
☐ > 1000 to 5000 lbs/day	3	15
☐ > 5000 lbs/day	4	20

Code Number Checked: NA

Points Scored: NA

C. Nitrogen Pollutants: (check one) ☐ Ammonia ☐ Other: _____

Permit Limits: (check one) *Nitrogen Equivalent*	Code	Points
☐ < 300 lbs/day	1	0
☐ 300 to 1000 lbs/day	2	5
☐ > 1000 to 3000 lbs/day	3	15
☐ > 3000 lbs/day	4	20

Code Number Checked: NA

Points Scored: NA

Total Points Factor 3: NA

FACTOR 4: Public Health Impact

Is there a public drinking water supply located within 50 miles downstream of the effluent discharge (this include any body of water to which the receiving water is a tributary)? A public drinking water supply may include infiltration galleries, or other methods of conveyance that ultimately get water from the above reference supply.

☐ YES; (If yes, check toxicity potential number below)

☐ NO; (If no, go to Factor 5)

Determine the *Human Health* potential from Appendix A. Use the same SIC doe and subcategory reference as in Factor 1. (Be sure to use the *Human Health* toxicity group column – check one below)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
☐ No process waste streams	0	0	☐ 3.	3	0	☐ 7.	7	15
☐ 1.	1	0	☐ 4.	4	0	☐ 8.	8	20
☐ 2.	2	0	☐ 5.	5	5	☐ 9.	9	25
			☐ 6.	6	10	☐ 10.	10	30

Code Number Checked: NA

Total Points Factor 4: NA

NPDES PERMIT RATING WORK SHEET

FACTOR 5: Water Quality Factors

A. *Is (or will) one or more of the effluent discharge limits based on water quality factors of the receiving stream (rather than technology-base federal effluent guidelines, or technology-base state effluent guidelines), or has a wasteload allocation been to the discharge*

	Code	Points
☐ YES	1	10
☐ NO	2	0

B. *Is the receiving water in compliance with applicable water quality standards for pollutants that are water quality limited in the permit?*

	Code	Points
☐ YES	1	0
☐ NO	2	5

C. *Does the effluent discharged from this facility exhibit the reasonable potential to violate water quality standards due to whole effluent toxicity?*

	Code	Points
☐ YES	1	10
☐ NO	2	0

Code Number Checked: A _____ B _____ C _____

Points Factor 5: A _____ + B 0 + C 0 = **NA**

FACTOR 6: Proximity to Near Coastal Waters

A. Base Score: Enter flow code here (from factor 2) _____

Check appropriate facility HPRI code (from PCS):

	HPRI#	Code	HPRI Score
☐	1	1	20
☐	2	2	0
☐	3	3	30
☐	4	4	0
☐	5	5	20

Enter the multiplication factor that corresponds to the flow code: _____

Flow Code	Multiplication Factor
11, 31, or 41	0.00
12, 32, or 42	0.05
13, 33, or 43	0.10
14 or 34	0.15
21 or 51	0.10
22 or 52	0.30
23 or 53	0.60
24	1.00

HPRI code checked : 4

Base Score (HPRI Score): 0 X (Multiplication Factor) 0.6 = NA

B. Additional Points – NEP Program

For a facility that has an HPRI code of 3, does the facility discharge to one of the estuaries enrolled in the National Estuary Protection (NEP) program (see instructions) or the Chesapeake Bay?

	Code	Points
☐	1	10
☐	2	0

C. Additional Points – Great Lakes Area of Concern

For a facility that has an HPRI code of 5, does the facility discharge any of the pollutants of concern into one of the Great Lakes' 31 area's of concern (see instructions)?

	Code	Points
☐	1	10
☐	2	0

Code Number Checked: A _____ B _____ C _____

Points Factor 6: A _____ + B _____ + C _____ = **NA**

NPDES PERMIT RATING WORK SHEET

SCORE SUMMARY

Factor	Description	Total Points
1	Toxic Pollutant Potential	NA
2	Flows / Streamflow Volume	NA
3	Conventional Pollutants	NA
4	Public Health Impacts	NA
5	Water Quality Factors	NA
6	Proximity to Near Coastal Waters	NA
	TOTAL (Factors 1 through 6)	NA

S1. Is the total score equal to or grater than 80 ☐ YES; (Facility is a Major) ☐ NO

S2. If the answer to the above questions is no, would you like this facility to be discretionary major?

☐ NO

☐ YES; (Add 500 points to the above score and provide reason below:

Reason: _____

NEW SCORE : 600

OLD SCORE : 600

Permit Reviewer's Name : Alison Thompson

Phone Number: (703)583-3834

Date: July 12, 2006

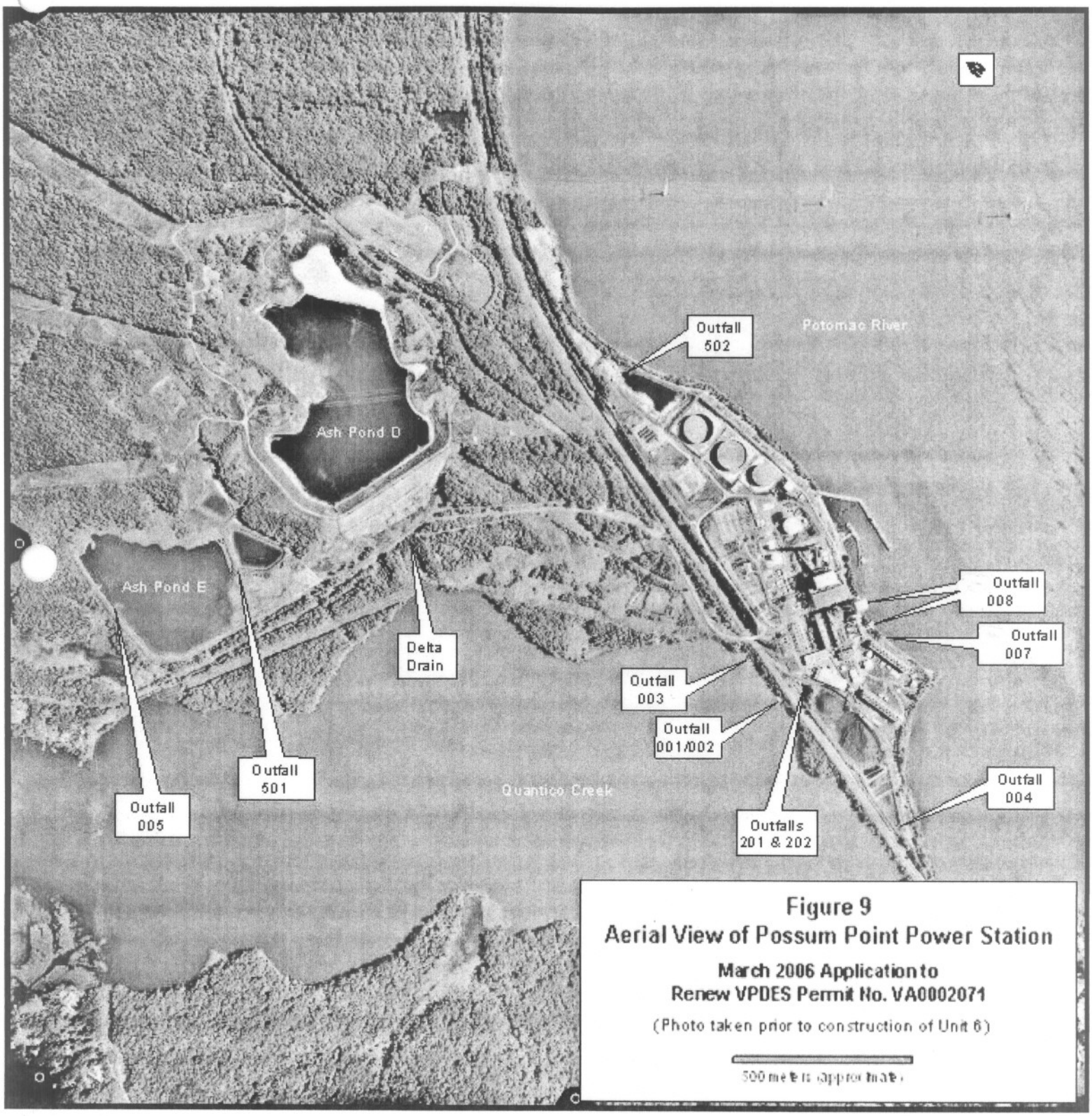


Figure 9
Aerial View of Possum Point Power Station
March 2006 Application to Renew VPDES Permit No. VA0002071

(Photo taken prior to construction of Unit 6)

500 meters approximate

BULK CHEMICAL LIST FOR 2006 POSSUM POINT VPDES PERMIT RENEWAL APPLICATION

Commercial or Generic Name of Chemical	Approx. Usage/Yr	Purpose and Treatment	Associated Outfall
Sulfuric acid	~ 150 tons	pH control in flash evaporator brine, cooling towers, demineralizer plant, and neutralization pit	001/002, 004, 005, 201, 202, 502
Betz KlarAid PC 1192	~ 19 tons	Coagulent	004, 501
Carbohydrazide, (Betz CorTrol OS 5607)	~ 27 tons	pH control, oxygen scavenger, metal passivator	004, 005, 502
Neutralizing amines compounds (ammonia hydroxide, cyclohexylamine, Morpholine soln.)	~ 15 tons	pH control in boiler feedwater cycle, HRSG	004, 005, 502
Soda ash	~ 5 tons	pH control - various station systems, acid neutralization	001/002, 004, 005, 201, 202, 502
Hydrated calcium lime	~ 63 tons	Acid neutralization in metals treatment pond & coal pile	004, 005, 501
Detergents/cleaning agents, phosphate free or citrus based.	~ 3 tons	General cleaning of various station equipment	all
Silicon emulsion, 10% dimethyl silicone, food grade	~ 1 ton	Antifoam agent for closed circulation cooling towers	001/002, 201, 202
Trisodium phosphate	~2 tons	Boiler pH control, water hardness reducer	004, 005, 502
Sodium hydroxide (caustic)	~ 5 tons	Boiler and neutralization pit pH control, RO cleaner	004, 005, 502
Tetrasodium EDTA	NA***	RO cleaning	004
Tetraammonium EDTA	~10-40 tons*	Boiler chemical cleaning*	501**
Sodium nitrite	~1-5 tons*	Boiler chemical cleaning*	501**
Cronox 240 Inhibitor	~200-500 lbs.*	Boiler chemical cleaning*	501**
Citric Acid	~10-40 tons*	Boiler chemical cleaning* RO Cleaning	004, 501**
Sodium hypochlorite	~360 tons	Water treatment, cooling tower antifoulant	004, 201, 202
Aluminum sulfate	~430 tons	Water treatment coagulant	004
Phosphates (di, tri, tripoly)	~2 tons	pH adjustment. water treatment	004, 005, 502
Sodium bisulfite	~57 tons	Dechlorination	001/002, 004, 201, 202
Ammonia hydroxide	~73 tons	NOX control in SCR system, water treatment/RO chem.	004, 005

Commercial or Generic Name of Chemical	Approx. Usage/Yr	Purpose and Treatment	Associated Outfall
Phosphonates and polyacrylate polymers	NA***	Scale inhibitor & dispersant in water treatment system	004
Sodium dodecylbenzene sulfonate	NA***	RO cleaning	004
Sodium hydrosulfite	NA***	RO cleaning	004
Sodium dodecylsulfate	~25 lbs	RO cleaning	004
Hydrochloric Acid	~1.5 tons	E Cell cleaning agent, EDR, RO cleaning agent	004
Salt/brine	~7 tons	E Cell/RO cleaning agent, EDR	004
Depositrol PY5201	N/A***	Cooling tower treatment	001/002, 202
Spectrus BD1500	N/A***	Cooling tower treatment	001/002, 202
Polyfloc AE1128P	~24 tons	Water treatment flocculant	001/002, 004, 202
Polyfloc AE1117	N/A***	Water treatment flocculant	001/002, 004, 202
Nalclear 7768	N/A***	Water treatment flocculant	004
Klaraid CDP1336, CDP1346	N/A***	Water treatment coagulant	001/002, 004, 202
Hypersperse MDC700	~1 ton	Water treatment/RO chem.	004
Conntect 6000	~0.6 ton	HRSG, turbine chemical	004
Propylene glycol	~2.5 tons	Freeze protection	004
Hydrogen peroxide	N/A***	Cleaning agent	001/002, 202
Kleen MCT411	~0.5 ton	RO Cleaning agent	004
Kleen MCT511	~0.5 ton	RO Cleaning agent	004
Kleen MCT103	~0.5 ton	RO Cleaning agent	004
Kleen MCT882	~0.5 ton	RO Cleaning agent	004
Biomate MBC2881	~1200 lbs	RO Cleaning agent	004
RoClean P303	~0.5 ton	RO Cleaning agent	004
RoClean P111	~0.5 ton	RO Cleaning agent	004
Spectrus OX103 (oxidizer)	~8 tons	Cooling tower circulating water treatment	201

* Boilers are cleaned approx. every 3-5 years. Therefore, for most years the usage/year is 0.

** EDTA boiler cleaning wastewater is sent off-site for treatment and disposal. Trace amounts may be present in discharge. Citric Acid boiler cleaning wash water (non-hazardous) may be sent to Metals Pond Treatment Facility (Outfall 501)

*** N/A = Not Available

September 13, 2006
MEMORANDUM

TO: Dominion Power – Possum Point Power Station Reissuance File VA0002071

FROM: Alison Thompson

SUBJECT: Site Inspection for the 2006 permit reissuance

COPIES: file

As part of the reissuance process for the Possum Point Power Station VPDES permit, site and stream inspections were conducted on August 7, 2006 by myself and Tom Faha. The following Dominion personnel took part in the inspection and pre- and post-meetings: Bob Williams, Kim Lanterman, Jeff Marcell, Robert McKinley, and William Clancy.

This station is sited on 650 acres along the Potomac River and Quantico Creek in Prince William County. There are four generating units currently in use. Units 3 and 4 are natural gas fired. Unit 5 is oil-fired, and Unit 6 is a combined-cycle unit using natural gas and #2 oil. Units 1 & 2 were the older oil-fired units that were retired in 2003. The four units are capable of producing 1244 MW.

Possum Point Generating Units		
Units	**Fuel Source**	**Max. Power Generated**
1 & 2	Offline	Offline - retired
3 & 4	#2 Natural Gas	109 MW & 210 MW
5	#6 low Sulfur Fuel Oil	350 MW
6	#2 Fuel Oil and Natural Gas	575 MW

Outfall 001/002
This outfall handles the once through non-contact condenser cooling water from Unit 3. The cooling water flows into a seal pit prior to discharging to the submerged outfall in Quantico Creek. Water from the seal pit is recycled for use in the cooling system of Unit 5. The Seal Pit is a relic of the days when the plant was coal fired; it is a cupola structure with an open bottom and a basin for water, forming a seal for closing said open bottom and through which the ash is removed.

Internal Outfall 201
This internal outfall is for the discharge of the cooling tower blowdown from Unit 5. This is an intermittent discharge that is chlorinated and dechlorinated prior to discharge. Sodium hypochlorite is used as an antifoulant for the cooling tower.

Internal Outfall 202
This internal outfall is for the discharge of the cooling tower blowdown from Unit 6. This is an intermittent discharge that is chlorinated and dechlorinated prior to discharge.

Outfall 003
This outfall handles the once through non-contact condenser cooling water from Unit 4. The submerged outfall is located on the bank of Quantico Creek. There are baffles set into the creek bottom to slow the velocity of the effluent to the stream. No erosion problems were noted.

Possum Point Power Plant
Site Visit Memorandum
September 13, 2006

Outfall 004
This is a shore based outfall consisting of a concrete pipe and rip rap. There is a series of four ponds called the low volume waste ponds that the water flows through prior to discharge. These ponds used to handle the coal pile runoff, but now just receive flows from:

Unit 6 quench water, boiler blowdown, turbine wash water, false start drains, RO and e-cell blowdown, clarifier drains, and the neutralization pit;
Unit 5 condenser drain, cooling tower drift, EDR backwash, and sand filter backwash;
Stormwater runoff.

Duck weed covered the surface of the ponds on the day of the inspection. Dredge material from the settling ponds is placed in Ash Pond D. The ponds were last dredged in 2002. There is an emergency overflow from the final pond. The discharge pipe is adjacent to the pipe used under normal conditions. There were weeds that had overgrown the rip rap below the outfall, but access to the outfall is well maintained. The discharge was clear and free from solids.

Outfall 005
This outfall discharges flow from Ash Pond E to an unnamed tributary to Quantico Creek. Ash Pond E receives flows from Internal Outfalls 501 and 502, intermittent decant from Ash Pond D if it is necessary, and stormwater. Outfall 005 is a concrete headwall. The discharge was clear and had a faint sulfur odor. Cattails and other growth made it impossible to see where the UT joined the main stem of Quantico Creek.

Ash Pond D. There are no direct discharges to this pond and it does not discharge unless it is decanted to Ash Pond E. This pond is currently used for filter cake from the demineralization water treatment plant for Unit 6, dredge spoils from the outfall 004 ponds, solids from the facility's stormwater management ponds, and approved dredge spoils from the Quantico Creek watershed. Discharge from this pond is very infrequent.

Internal Outfall 501
The discharge from this internal outfall comes from the metals cleaning waste basins – two polyethylene lined ponds in series. Wastewater to these ponds comes from the periodic cleaning of the boilers and cooling towers. The pipe runs from the cooling tower area to the ponds. Lime and polymer are added as the water flows into the second pond. The discharge is batched to Ash Pond E once the water is neutralized and any solids/precipitate have settled.

Internal Outfall 502
The discharge from this internal outfall comes from the Oily Waste Treatment Basin and pumped to Pond E. This clay lined basin is receives low volume waste from Unit 5, stormwater from the AST containment area, tank bottom water, auxiliary boiler blowdown, and cooling tower drift and turbine false start drains from Unit 6. Monitoring wells are located around this basin. DEQ asked that a tree be removed from the earthen berm; Dominion notified DEQ by email on September 7 that the tree had been removed.

AST Containment Area. There is a 21 million gallon AST used for the fuel oil for Unit 5. Any stormwater that accumulates in this area is batched to the Oily Waste Treatment Basin.

Demineralization Water Treatment Plant. This facility processes water from the Potomac River for use in Unit 6. River water is flash mixed with aluminum sulfate and polymer and is then sent to one of the two clarifiers. The clarified water is pumped through the carbon towers and RO membranes before being stored in a 3 million gallon storage tank. The solids from the clarifiers are pressed and the filter cake is disposed of in Ash Pond D. The press was run every 12 hours this summer. The water from the press is sent to the head of the WTP. The RO reject water is sent to the neutralization pond (Outfall 004).

Outfalls 007 & 008
These two outfalls serve the Potomac River intake structures. Water is pumped out of the river and through rotating screens. Detritus and any fish from the river are screened out and backwashed back to the river. Outfall 007 is the main "fish return line." Outfall 008 is used when the freeze protection system is in use in the colder months. These outfalls have historically been permitted by the State of Maryland. With the VPDES permit reissuance, they will be added to the VPDES permit and the Maryland permit will be terminated.

To: Rob Swanson
From: Alison Thompson

Date: July 12, 2006
Subject: Planning Statement for Dominion Power – Possum Point
VA0002071

Discharge Type: Industrial
Discharge Flow: Average varies by outfall (0.3 – 120.6 mgd)

Receiving Stream: Potomac River, Quantico Creek, UT to Quantico Creek
Latitude / Longitude: multiple outfalls (let me know if you want all of them)

1. Is there monitoring data for the receiving stream?
Yes. While there is no monitoring on stream XGR (Outfall 005), there is monitoring along Quantico Creek. Please see the attached map for a visual display. Outfalls 007 and 008 are located along the Potomac River, which is outside of our region. I have no information for the Potomac River itself. However, I know that the tidal fresh portion of the Potomac River (POTTF) is impaired for aquatic plants (SAV) and PCBs in fish tissue- the tidal embayments along the Potomac River are noted in a VDH Fish Consumption Advisory, so I am assuming the Potomac River, itself, is also impaired.
- If yes, please attach latest summary.
Please see the summaries on the following pages.
- If no, where is the nearest downstream monitoring station.

2. Is the receiving stream on the current 303(d) list? Yes.

- If yes, what is the impairment?
The entire estuarine portion of Quantico Creek is noted for aquatic plants (macrophytes) due to there being an insufficient amount of submerged aquatic vegetation (SAV) to fulfill the goal established for the POTTF segment. Also, the estuarine embayment for Quantico Creek is included in the VDH Fish Consumption Advisory for PCBs in fish tissue. Finally, additional monitoring was done as part of the Coastal 2000 survey (estuarine probabilistic monitoring) at station 1AQUA001.09 (in segment VAN-A26E_QUA01A04). The results of the survey showed two additional impairments for the aquatic life use; 1. Sediment Bioasssays for Estuarine and Marine Waters and 2. Estuarine Bioassessments. Also, this Coastal 2000 monitoring showed an exceedance of the Estuarine NOAA-based ER-M Sediment Screening Value (SV) for nickel (51.6 ppm). The nickel exceedance is noted by an observed effect for the aquatic life use.

- Has the TMDL been prepared?
A TMDL has not been prepared for any of these impairments. The Potomac River PCB Impairment has a TMDL process underway, however, it is only in the initial stages. The first round of preliminary public meets (outlining what will happen in the process) took place in

June. Currently, data collection and analysis are occurring. The TMDL is due September 30, 2007.

- If yes, what is the WLA for the discharge?
No WLAs have been established at this time.

- If no, what is the schedule for the TMDL?
PCB- Due September 30, 2007.
Aquatic Plants- Due 2010 (as part of Chesapeake Bay schedule).
Sediment Bioasssays for Estuarine and Marine Waters and Estuarine Bioassessments- Due 2018, as they are new impairments.

3. If the answer to (2) above is no, is there a downstream 303(d) listed impairment?

- If yes, what is the impairment? NA

- Has a TMDL been prepared? NA

- Will the TMDL include the receiving stream? NA

- Is there a WLA for the discharge? NA

- What is the schedule for the TMDL? NA

4. Is there monitoring or other conditions that Planning/Assessment needs in the permit?
The following conclusion resulted from the Coastal 2000 study at station 1AQUA001.09:

Coastal 2000 weight of evidence analysis, utilizing bulk chemical data, toxicity test data, and an evaluation of benthic community conditions, resulted in an impaired determination for the aquatic life use. Results from the estuarine bioassessment, sediment chemistry analysis (elevated nickel levels), and sediment bioassay for estuarine waters were all factors for this determination. Based on the Coastal 2000 weight of evidence analysis, utilizing bulk chemical data, toxicity test data, and an evaluation of benthic community conditions. Conclusions noted that organic enrichment, as well as chemical contamination, may be responsible for the impairment. The estuarine bioassessment survey revealed low diversity of benthic faunal taxa. The acute sediment bioassay revealed slight, yet significant, toxicity.

While the raw data, attached to the email in as a spreadsheet, provides additional detail, it is noted that organic enrichment, as well as chemical contamination, may be responsible for the impairment. As nickel levels were elevated, as well, it may be useful to include monitoring to assess if Possum Point is contributing to these elevated levels. I noticed that Attachment A would involve monitoring of metals, however, we recommend monitoring at an increased frequency than once every five years. Also, the metals to be monitored are in dissolved form only. As the concentrations appear in sediment, knowledge of the total metal concentrations discharged may be useful. Please disregard these comments if such monitored has occurred for previous permits.

VAN-A26E_QUA02A06	Quantico Creek	0.28 square miles

Segment extends to a 0.5 mile radius around station 1AQUA002.15. Portion of CBP segment POTTF.

Class II, Section 6, special stds. b.

DEQ special study station 1AQUA002.15.

Historical Note: Prior to 2004, this segment was part of segment VAN-A26E_POT20A02.

The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. The advisory, dated 4/19/99 and modified 12/13/04, limits consumption of American eel, bullhead catfish, channel catfish less than eighteen inches long, largemouth bass, anadromous (coastal) striped bass, sunfish species, smallmouth bass, white catfish, white perch, gizzard shad, and yellow perch consumption to no more than two meals per month. The advisory also restricts the consumption of carp and channel catfish greater than eighteen inches long. The affected area includes the tidal portions of the following tributaries and embayments from the I-395 bridge (above the Woodrow Wilson Bridge) to the Potomac River Bridge at Route 301: Fourmile Run, Hunting Creek, Little Hunting Creek, Pohick Creek, Accotink Creek, Occoquan River, Neabsco Creek, Powell Creek, Quantico Creek, Chopawamsic Creek, Aquia Creek, and Potomac Creek.

There is insufficient information to determine if the open water aquatic life subuse is met; the thirty day mean is acceptable, however, the seven day mean and instantaneous levels have not been assessed. Because submerged aquatic vegetation subuse of the aquatic life use was not met, the segment is considered impaired for the aquatic life use. The recreation and wildlife uses were not assessed.

2004 TMDL ID for this segment was VAN-A13E-01.

VAN-A26E_POT20A02	Quantico Creek/Powells Creek	1.06 square miles

Segment includes all tidal waters in watershed not included in other delineated stream segments. Portion of CBP segment POTTF.

Historical Note: Segment replaces former ZZZ waters to identify tidal waters that partially support the fish consumption use based on the VDH fish consumption advisory.

The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. The advisory, dated 4/19/99 and modified 12/13/04, limits consumption of American eel, bullhead catfish, channel catfish less than eighteen inches long, largemouth bass, anadromous (coastal) striped bass, sunfish species, smallmouth bass, white catfish, white perch, gizzard shad, and yellow perch consumption to no more than two meals per month. The advisory also restricts the consumption of carp and channel catfish greater than eighteen inches long. The affected area includes the tidal portions of the following tributaries and embayments from the I-395 bridge (above the Woodrow Wilson Bridge) to the Potomac River Bridge at Route 301: Fourmile Run, Hunting Creek, Little Hunting Creek, Pohick Creek, Accotink Creek, Occoquan River, Neabsco Creek, Powell Creek, Quantico Creek, Chopawamsic Creek, Aquia Creek, and Potomac Creek.

There is insufficient information to determine if the open water aquatic life subuse is met; the thirty day mean is acceptable, however, the seven day mean and instantaneous levels have not been assessed. Because submerged aquatic vegetation subuse of the aquatic life use was not met, the segment is considered impaired for the aquatic life use. The recreation and wildlife uses were not assessed.

2004 TMDL ID for this segment was VAN-A13E-01.

VAN-A26E_QUA01A04	Quantico Creek	0.429 square miles

Segment extends to a 0.5-mile radius around station 1AQUA001.09. Portion of CBP segment POTTF.

Class II, Section 6, special stds. b.

DEQ Coastal 2000, part of estuarine probabilistic monitoring, station 1AQUA001.09, approximately 0.75 rivermile above the railroad bridge. Sampling was conducted in 2001.

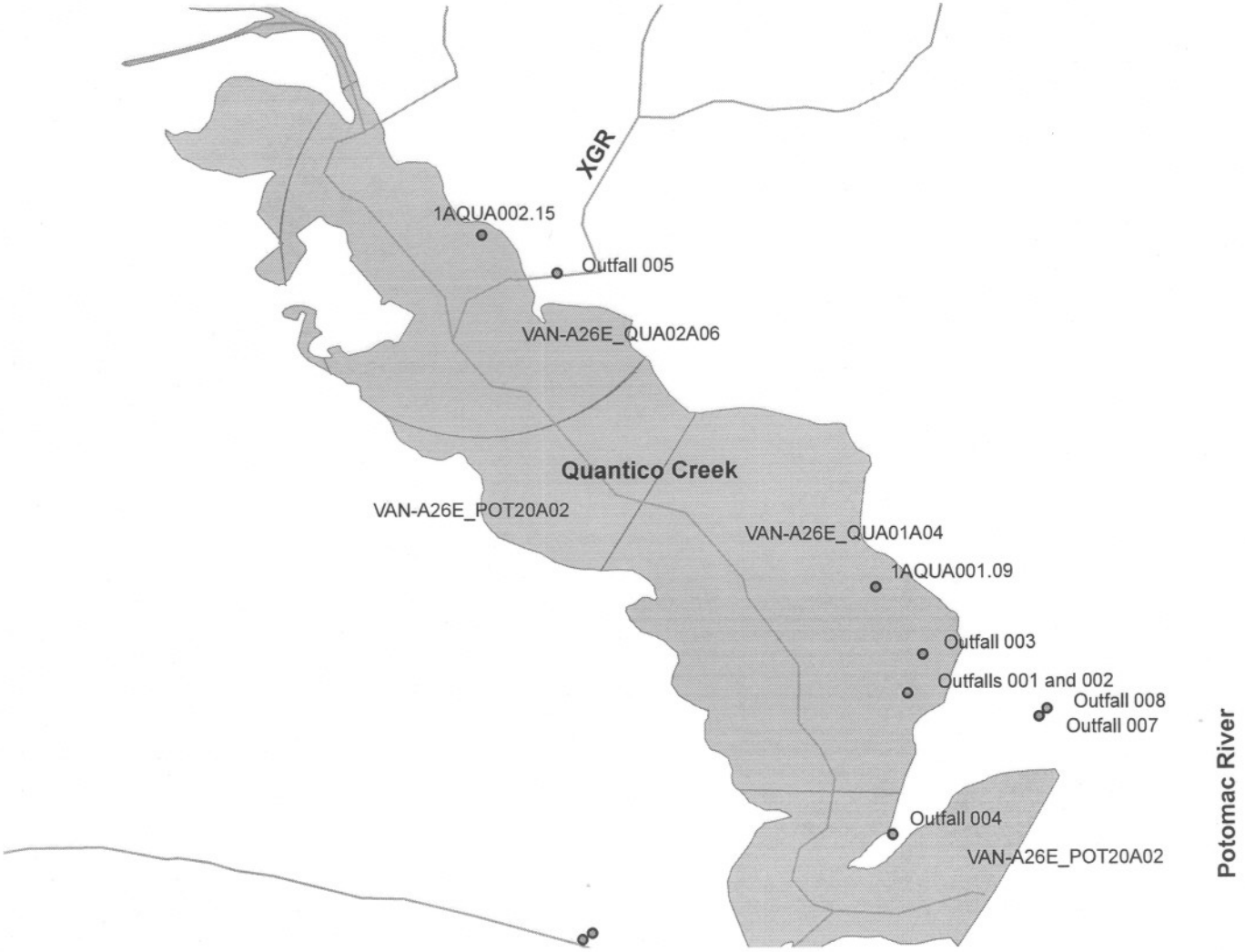
The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. The advisory, dated 4/19/99 and modified 12/13/04, limits consumption of American eel, bullhead catfish, channel catfish less than eighteen inches long, largemouth bass, anadromous (coastal) striped bass, sunfish species, smallmouth bass, white catfish, white perch, gizzard shad, and yellow perch consumption to no more than two meals per month. The advisory also restricts the consumption of carp and channel catfish greater than eighteen inches long. The affected area includes the tidal portions of the following tributaries and embayments from the I-395 bridge (above the Woodrow Wilson Bridge) to the Potomac River Bridge at Route 301: Fourmile Run, Hunting Creek, Little Hunting Creek, Pohick Creek, Accotink Creek, Occoquan River, Neabsco Creek, Powell Creek, Quantico Creek, Chopawamsic Creek, Aquia Creek, and Potomac Creek.

Coastal 2000 weight of evidence analysis, utilizing bulk chemical data, toxicity test data, and an evaluation of benthic community conditions, resulted in an impaired determination for the aquatic life use. Results from the estuarine bioassessment, sediment chemistry analysis (elevated nickel levels), and sediment bioassay for estuarine waters were all factors for this determination. Additionally, there is insufficient information to determine if the open water aquatic life subuse is met; the thirty day mean is acceptable, however, the seven day mean and instantaneous levels have not been assessed. Because submerged aquatic vegetation subuse of the aquatic life use was not met, the segment is considered impaired for the aquatic life use. The recreation and wildlife uses were not assessed.

2004 TMDL ID for this segment was VAN-A13E-01.

Based on the Coastal 2000 weight of evidence analysis, utilizing bulk chemical data, toxicity test data, and an evaluation of benthic community conditions. Conclusions noted that organic enrichment, as well as chemical contamination, may be responsible for the impairment. The survey revealed low diversity of benthic faunal taxa.

Based on the Coastal 2000 weight of evidence analysis, utilizing bulk chemical data, toxicity test data, and an evaluation of benthic community conditions. Conclusions noted that organic enrichment, as well as chemical contamination, may be responsible for the impairment. The acute bioassay revealed slight, yet significant, toxicity.


XGR
1AQUA002.15
Outfall 005
VAN-A26E_QUA02A06
Quantico Creek
VAN-A26E_POT20A02
VAN-A26E_QUA01A04
1AQUA001.09
Outfall 003
Outfalls 001 and 002
Outfall 008
Outfall 007
Outfall 004
VAN-A26E_POT20A02
Potomac River

2006 Water Quality Based Limited Sources - Delisted Category 4B and 5E Waters

VPDES Permit	Stream Name	Outfall	Size	Parameter	Source	First Listing
Potomac River & Shenandoah River Basins						
VA0002071	Quantico Creek	005	0.83-MZ-Sq. Miles	Se (Outfall 005)	Virginia Power - Possum Point Power Station	2002
VA0020532	Shenandoah River	001	24.23-MZ-Miles	Total Residual Chlorine	Berryville	1998
VA0022802	North Fork Goose Creek-UT	001	1.48-MZ-Miles	Ammonia	Purcellville, Town of WWQMF	1998
VA0023825	S.F. Shenandoah River	001	77.66-MZ-Miles	TRC	Shenandoah STP	2002
VA0024732	Quail Run	001	5.07-MZ-Miles	Ammonia	Massanutten STP	1998
VA0024732	Quail Run	001	5.07-MZ-Miles	Cyanide, Di 2 Eth Hexel Phthalate	Massanutten STP	2004
VA0024775	Wancopin Creek	001	3.07-MZ-Miles	Copper	Middleburg WWTP	2002
VA0026212	North Fork Goose Creek	001	12.42-MZ-Miles	Dissolved Oxygen (BOD5)	Town of Round Hill WWTP	2002
VA0026212	North Fork Goose Creek	001	12.42-MZ-Miles	Total Kjeldahl Nitrogen	Town of Round Hill WWTP	1998
VA0026514	Williams Creek	001	1.67-MZ-Sq. Miles	Ammonia	Dahlgren District WWTP	1998
VA0032000	Roaches Run	001	0.46-MZ-Sq. Miles	Copper	Pentagon Reservation	2002
VA0051420	North River	001	21.4-MZ-Miles	Total Residual Chlorine	Bridgewater WTP	2004
VA0060640	North River	001	15.01-MZ-Miles	Ammonia	North River WWTF	2002
VA0060968	Austin Run-UT	001	0.14-MZ-Miles	Ammonia	Aquia Wastewater Treatment Facility	1998
VA0060968	Austin Run-UT	001	0.14-MZ-Miles	Dissolved Oxygen (CBOD, TP)	Aquia Wastewater Treatment Facility	2002
VA0061964	Crooked Run X Trib	001	1.41-MZ-Miles	Ammonia	Forest Lake Estates STP	2004
VA0067962	South River X-Trib	001	0.2-MZ-Miles	Copper	Vesper View STP	2002
VA0072044	N.F. Shenandoah River	001	2.47-MZ-Miles	TRC	North Fork Resort STP	2002
VA0075183	Dry Run	001	2.56-MZ-Miles	Ammonia	Skyline Resort	1998
VA0088170	Falling Spring, U.T.	001	-Miles	Chlorides	Verona WTP	2002
VA0088471	Opequon Creek	001	36.19-MZ-Miles	Ammonia	Frederick County Landfill	2002
VA0089095	Crooked Run X Trib2	001	3.13-2.94-Miles	BOD5, DO	Pioneer Trailer Park	1998
VA0089109	Backlick Run	001	0.1-MZ-Miles	Zinc	U.S. Army - Cameron Station	2002
James River Basin						
VA0003646	Jackson River	003	24.64-13.43-Miles	Dissolved Oxygen	MeadWestvaco of Virginia Corporation	1998
VA0003875	Southern Branch Elizabeth River	001	5.75-MZ-Sq. Miles	Ammonia	Royster - Clark, Inc.	2002

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Dominion Power Possum Point Permit No.: VA0002071

Receiving Stream: Potomac River Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =	118	mg/L
90% Temperature (Annual) =	18	deg C
90% Temperature (Wet season) =	7	deg C
90% Maximum pH =	8.2	SU
10% Maximum pH =		SU
Tier Designation (1 or 2) =	1	
Public Water Supply (PWS) Y/N? =	n	
Trout Present Y/N? =	n	
Early Life Stages Present Y/N? =	y	

Stream Flows

1Q10 (Annual) =	1	MGD
7Q10 (Annual) =	1	MGD
30Q10 (Annual) =	1	MGD
1Q10 (Wet season) =	1	MGD
30Q10 (Wet season)	1	MGD
30Q5 =	1	MGD
Harmonic Mean =	1	MGD
Annual Average =	n/a	MGD

Mixing Information

Annual - 1Q10 Mix =	100	%
- 7Q10 Mix =	100	%
- 30Q10 Mix =	100	%
Wet Season - 1Q10 Mix =	100	%
- 30Q10 Mix =	100	%

2:1 Dilution factor

Effluent Information

Mean Hardness (as CaCO3) =		mg/L
90% Temp (Annual) =		deg C
90% Temp (Wet season) =		deg C
90% Maximum pH =		SU
10% Maximum pH =		SU
Discharge Flow =	1	MGD

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Acenapthene	0	--	--	na	2.7E+03	--	--	na	5.4E+03	--	--	--	--	--	--	--	--	--	--	na	5.4E+03
Acrolein	0	--	--	na	7.8E+02	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03
Acrylonitrile [C]	0	--	--	na	6.6E+00	--	--	na	1.3E+01	--	--	--	--	--	--	--	--	--	--	na	1.3E+01
Aldrin [C]	0	3.0E+00	--	na	1.4E-03	6.0E+00	--	na	2.8E-03	--	--	--	--	--	--	--	--	6.0E+00	--	na	2.8E-03
Ammonia-N (mg/l) (Yearly)	0	5.84E+01	7.09E+00	na	--	1.2E+02	1.4E+01	na	--	--	--	--	--	--	--	--	--	1.2E+02	1.4E+01	na	--
Ammonia-N (mg/l) (High Flow)	0	5.84E+01	7.09E+00	na	--	1.2E+02	1.4E+01	na	--	--	--	--	--	--	--	--	--	1.2E+02	1.4E+01	na	--
Anthracene	0	--	--	na	1.1E+05	--	--	na	2.2E+05	--	--	--	--	--	--	--	--	--	--	na	2.2E+05
Antimony	0	--	--	na	4.3E+03	--	--	na	8.6E+03	--	--	--	--	--	--	--	--	--	--	na	8.6E+03
Arsenic	0	3.4E+02	1.5E+02	na	--	6.8E+02	3.0E+02	na	--	--	--	--	--	--	--	--	--	6.8E+02	3.0E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene [C]	0	--	--	na	7.1E+02	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	--	--	na	1.4E+03
Benzidine [C]	0	--	--	na	5.4E-03	--	--	na	1.1E-02	--	--	--	--	--	--	--	--	--	--	na	1.1E-02
Benzo (a) anthracene [C]	0	--	--	na	4.9E-01	--	--	na	9.8E-01	--	--	--	--	--	--	--	--	--	--	na	9.8E-01
Benzo (b) fluoranthene [C]	0	--	--	na	4.9E-01	--	--	na	9.8E-01	--	--	--	--	--	--	--	--	--	--	na	9.8E-01
Benzo (k) fluoranthene [C]	0	--	--	na	4.9E-01	--	--	na	9.8E-01	--	--	--	--	--	--	--	--	--	--	na	9.8E-01
Benzo (a) pyrene [C]	0	--	--	na	4.9E-01	--	--	na	9.8E-01	--	--	--	--	--	--	--	--	--	--	na	9.8E-01
Bis2-Chloroethyl Ether	0	--	--	na	1.4E+01	--	--	na	2.8E+01	--	--	--	--	--	--	--	--	--	--	na	2.8E+01
Bis2-Chloroisopropyl Ether	0	--	--	na	1.7E+05	--	--	na	3.4E+05	--	--	--	--	--	--	--	--	--	--	na	3.4E+05
Bromoform [C]	0	--	--	na	3.6E+03	--	--	na	7.2E+03	--	--	--	--	--	--	--	--	--	--	na	7.2E+03
Butylbenzylphthalate	0	--	--	na	5.2E+03	--	--	na	1.0E+04	--	--	--	--	--	--	--	--	--	--	na	1.0E+04
Cadmium	0	2.2E+00	7.5E-01	na	--	4.3E+00	1.5E+00	na	--	--	--	--	--	--	--	--	--	4.3E+00	1.5E+00	na	--
Carbon Tetrachloride [C]	0	--	--	na	4.4E+01	--	--	na	8.8E+01	--	--	--	--	--	--	--	--	--	--	na	8.8E+01
Chlordane [C]	0	2.4E+00	4.3E-03	na	2.2E-02	4.8E+00	8.6E-03	na	4.4E-02	--	--	--	--	--	--	--	--	4.8E+00	8.6E-03	na	4.4E-02
Chloride	0	8.6E+05	2.3E+05	na	--	1.7E+06	4.6E+05	na	--	--	--	--	--	--	--	--	--	1.7E+06	4.6E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	3.8E+01	2.2E+01	na	--	--	--	--	--	--	--	--	--	3.8E+01	2.2E+01	na	--
Chlorobenzene	0	--	--	na	2.1E+04	--	--	na	4.2E+04	--	--	--	--	--	--	--	--	--	--	na	4.2E+04

Attachment 6

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane[C]	0	--	--	na	3.4E+02	--	--	na	6.8E+02	--	--	--	--	--	--	--	--	--	--	na	6.8E+02
Chloroform [C]	0	--	--	na	2.9E+04	--	--	na	5.8E+04	--	--	--	--	--	--	--	--	--	--	na	5.8E+04
2-Chloronaphthalene	0	--	--	na	4.3E+03	--	--	na	8.6E+03	--	--	--	--	--	--	--	--	--	--	na	8.6E+03
2-Chlorophenol	0	--	--	na	4.0E+02	--	--	na	8.0E+02	--	--	--	--	--	--	--	--	--	--	na	8.0E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	1.7E-01	8.2E-02	na	--	--	--	--	--	--	--	--	--	1.7E-01	8.2E-02	na	--
Chromium III	0	3.7E+02	4.8E+01	na	--	7.4E+02	9.6E+01	na	--	--	--	--	--	--	--	--	--	7.4E+02	9.6E+01	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	3.2E+01	2.2E+01	na	--	--	--	--	--	--	--	--	--	3.2E+01	2.2E+01	na	--
Chromium, Total	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene [C]	0	--	--	na	4.9E-01	--	--	na	9.8E-01	--	--	--	--	--	--	--	--	--	--	na	9.8E-01
Copper	0	8.2E+00	5.7E+00	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	--
Cyanide	0	2.2E+01	5.2E+00	na	2.2E+05	4.4E+01	1.0E+01	na	4.3E+05	--	--	--	--	--	--	--	--	4.4E+01	1.0E+01	na	4.3E+05
DDD [C]	0	--	--	na	8.4E-03	--	--	na	1.7E-02	--	--	--	--	--	--	--	--	--	--	na	1.7E-02
DDE [C]	0	--	--	na	5.9E-03	--	--	na	1.2E-02	--	--	--	--	--	--	--	--	--	--	na	1.2E-02
DDT [C]	0	1.1E+00	1.0E-03	na	5.9E-03	2.2E+00	2.0E-03	na	1.2E-02	--	--	--	--	--	--	--	--	2.2E+00	2.0E-03	na	1.2E-02
Demeton	0	--	1.0E-01	na	--	--	2.0E-01	na	--	--	--	--	--	--	--	--	--	--	2.0E-01	na	--
Dibenz(a,h)anthracene [C]	0	--	--	na	4.9E-01	--	--	na	9.8E-01	--	--	--	--	--	--	--	--	--	--	na	9.8E-01
Dibutyl phthalate	0	--	--	na	1.2E+04	--	--	na	2.4E+04	--	--	--	--	--	--	--	--	--	--	na	2.4E+04
Dichloromethane (Methylene Chloride) [C]	0	--	--	na	1.6E+04	--	--	na	3.2E+04	--	--	--	--	--	--	--	--	--	--	na	3.2E+04
1,2-Dichlorobenzene	0	--	--	na	1.7E+04	--	--	na	3.4E+04	--	--	--	--	--	--	--	--	--	--	na	3.4E+04
1,3-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	5.2E+03	--	--	--	--	--	--	--	--	--	--	na	5.2E+03
1,4-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	5.2E+03	--	--	--	--	--	--	--	--	--	--	na	5.2E+03
3,3-Dichlorobenzidine[C]	0	--	--	na	7.7E-01	--	--	na	1.5E+00	--	--	--	--	--	--	--	--	--	--	na	1.5E+00
Dichlorobromomethane [C]	0	--	--	na	4.6E+02	--	--	na	9.2E+02	--	--	--	--	--	--	--	--	--	--	na	9.2E+02
1,2-Dichloroethane [C]	0	--	--	na	9.9E+02	--	--	na	2.0E+03	--	--	--	--	--	--	--	--	--	--	na	2.0E+03
1,1-Dichloroethylene	0	--	--	na	1.7E+04	--	--	na	3.4E+04	--	--	--	--	--	--	--	--	--	--	na	3.4E+04
1,2-trans-dichloroethylene	0	--	--	na	1.4E+05	--	--	na	2.8E+05	--	--	--	--	--	--	--	--	--	--	na	2.8E+05
2,4-Dichlorophenol	0	--	--	na	7.9E+02	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane[C]	0	--	--	na	3.9E+02	--	--	na	7.8E+02	--	--	--	--	--	--	--	--	--	--	na	7.8E+02
1,3-Dichloropropene	0	--	--	na	1.7E+03	--	--	na	3.4E+03	--	--	--	--	--	--	--	--	--	--	na	3.4E+03
Dieldrin [C]	0	2.4E-01	5.6E-02	na	1.4E-03	4.8E-01	1.1E-01	na	2.8E-03	--	--	--	--	--	--	--	--	4.8E-01	1.1E-01	na	2.8E-03
Diethyl Phthalate	0	--	--	na	1.2E+05	--	--	na	2.4E+05	--	--	--	--	--	--	--	--	--	--	na	2.4E+05
Di-2-Ethylhexyl Phthalate [C]	0	--	--	na	5.9E+01	--	--	na	1.2E+02	--	--	--	--	--	--	--	--	--	--	na	1.2E+02
2,4-Dimethylphenol	0	--	--	na	2.3E+03	--	--	na	4.6E+03	--	--	--	--	--	--	--	--	--	--	na	4.6E+03
Dimethyl Phthalate	0	--	--	na	2.9E+06	--	--	na	5.8E+06	--	--	--	--	--	--	--	--	--	--	na	5.8E+06
Di-n-Butyl Phthalate	0	--	--	na	1.2E+04	--	--	na	2.4E+04	--	--	--	--	--	--	--	--	--	--	na	2.4E+04
2,4 Dinitrophenol	0	--	--	na	1.4E+04	--	--	na	2.8E+04	--	--	--	--	--	--	--	--	--	--	na	2.8E+04
2-Methyl-4,6-Dinitrophenol	0	--	--	na	7.65E+02	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	--	--	na	1.5E+03
2,4-Dinitrotoluene [C]	0	--	--	na	9.1E+01	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	--	--	na	1.8E+02
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin) (ppq)	0	--	--	na	1.2E-06	--	--	na	na	--	--	--	--	--	--	--	--	--	--	na	na
1,2-Diphenylhydrazine[C]	0	--	--	na	5.4E+00	--	--	na	1.1E+01	--	--	--	--	--	--	--	--	--	--	na	1.1E+01
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	4.4E-01	1.1E-01	na	4.8E+02	--	--	--	--	--	--	--	--	4.4E-01	1.1E-01	na	4.8E+02
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	4.4E-01	1.1E-01	na	4.8E+02	--	--	--	--	--	--	--	--	4.4E-01	1.1E-01	na	4.8E+02
Endosulfan Sulfate	0	--	--	na	2.4E+02	--	--	na	4.8E+02	--	--	--	--	--	--	--	--	--	--	na	4.8E+02
Endrin	0	8.6E-02	3.6E-02	na	8.1E-01	1.7E-01	7.2E-02	na	1.6E+00	--	--	--	--	--	--	--	--	1.7E-01	7.2E-02	na	1.6E+00
Endrin Aldehyde	0	--	--	na	8.1E-01	--	--	na	1.6E+00	--	--	--	--	--	--	--	--	--	--	na	1.6E+00

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.9E+04	--	--	na	5.8E+04	--	--	--	--	--	--	--	--	--	--	na	5.8E+04
Fluoranthene	0	--	--	na	3.7E+02	--	--	na	7.4E+02	--	--	--	--	--	--	--	--	--	--	na	7.4E+02
Fluorene	0	--	--	na	1.4E+04	--	--	na	2.8E+04	--	--	--	--	--	--	--	--	--	--	na	2.8E+04
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	2.0E-02	na	--	--	--	--	--	--	--	--	--	--	2.0E-02	na	--
Heptachlor [c]	0	5.2E-01	3.8E-03	na	2.1E-03	1.0E+00	7.6E-03	na	4.2E-03	--	--	--	--	--	--	--	--	1.0E+00	7.6E-03	na	4.2E-03
Heptachlor Epoxide[c]	0	5.2E-01	3.8E-03	na	1.1E-03	1.0E+00	7.6E-03	na	2.2E-03	--	--	--	--	--	--	--	--	1.0E+00	7.6E-03	na	2.2E-03
Hexachlorobenzene[c]	0	--	--	na	7.7E-03	--	--	na	1.5E-02	--	--	--	--	--	--	--	--	--	--	na	1.5E-02
Hexachlorobutadiene[c]	0	--	--	na	5.0E+02	--	--	na	1.0E+03	--	--	--	--	--	--	--	--	--	--	na	1.0E+03
Hexachlorocyclohexane Alpha-BHC[c]	0	--	--	na	1.3E-01	--	--	na	2.6E-01	--	--	--	--	--	--	--	--	--	--	na	2.6E-01
Hexachlorocyclohexane Beta-BHC[c]	0	--	--	na	4.6E-01	--	--	na	9.2E-01	--	--	--	--	--	--	--	--	--	--	na	9.2E-01
Hexachlorocyclohexane Gamma-BHC[c] (Lindane)	0	9.5E-01	na	na	6.3E-01	1.9E+00	--	na	1.3E+00	--	--	--	--	--	--	--	--	1.9E+00	--	na	1.3E+00
Hexachlorocyclopentadiene	0	--	--	na	1.7E+04	--	--	na	3.4E+04	--	--	--	--	--	--	--	--	--	--	na	3.4E+04
Hexachloroethane[c]	0	--	--	na	8.9E+01	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	--	--	na	1.8E+02
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	4.0E+00	na	--	--	--	--	--	--	--	--	--	--	4.0E+00	na	--
Indeno (1,2,3-cd) pyrene [c]	0	--	--	na	4.9E-01	--	--	na	9.8E-01	--	--	--	--	--	--	--	--	--	--	na	9.8E-01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone[c]	0	--	--	na	2.6E+04	--	--	na	5.2E+04	--	--	--	--	--	--	--	--	--	--	na	5.2E+04
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	6.1E+01	6.9E+00	na	--	1.2E+02	1.4E+01	na	--	--	--	--	--	--	--	--	--	1.2E+02	1.4E+01	na	--
Malathion	0	--	1.0E-01	na	--	--	2.0E-01	na	--	--	--	--	--	--	--	--	--	--	2.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	na	5.1E-02	2.8E+00	1.5E+00	na	1.0E-01	--	--	--	--	--	--	--	--	2.8E+00	1.5E+00	na	1.0E-01
Methyl Bromide	0	--	--	na	4.0E+03	--	--	na	8.0E+03	--	--	--	--	--	--	--	--	--	--	na	8.0E+03
Methoxychlor	0	--	3.0E-02	na	--	--	6.0E-02	na	--	--	--	--	--	--	--	--	--	--	6.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Monochlorobenzene	0	--	--	na	2.1E+04	--	--	na	4.2E+04	--	--	--	--	--	--	--	--	--	--	na	4.2E+04
Nickel	0	1.2E+02	1.3E+01	na	4.6E+03	2.3E+02	2.6E+01	na	9.2E+03	--	--	--	--	--	--	--	--	2.3E+02	2.6E+01	na	9.2E+03
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	1.9E+03	--	--	na	3.8E+03	--	--	--	--	--	--	--	--	--	--	na	3.8E+03
N-Nitrosodimethylamine[c]	0	--	--	na	8.1E+01	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	--	--	na	1.6E+02
N-Nitrosodiphenylamine[c]	0	--	--	na	1.6E+02	--	--	na	3.2E+02	--	--	--	--	--	--	--	--	--	--	na	3.2E+02
N-Nitrosodi-n-propylamine[c]	0	--	--	na	1.4E+01	--	--	na	2.8E+01	--	--	--	--	--	--	--	--	--	--	na	2.8E+01
Parathion	0	6.5E-02	1.3E-02	na	--	1.3E-01	2.6E-02	na	--	--	--	--	--	--	--	--	--	1.3E-01	2.6E-02	na	--
PCB-1016	0	--	1.4E-02	na	--	--	2.8E-02	na	--	--	--	--	--	--	--	--	--	--	2.8E-02	na	--
PCB-1221	0	--	1.4E-02	na	--	--	2.8E-02	na	--	--	--	--	--	--	--	--	--	--	2.8E-02	na	--
PCB-1232	0	--	1.4E-02	na	--	--	2.8E-02	na	--	--	--	--	--	--	--	--	--	--	2.8E-02	na	--
PCB-1242	0	--	1.4E-02	na	--	--	2.8E-02	na	--	--	--	--	--	--	--	--	--	--	2.8E-02	na	--
PCB-1248	0	--	1.4E-02	na	--	--	2.8E-02	na	--	--	--	--	--	--	--	--	--	--	2.8E-02	na	--
PCB-1254	0	--	1.4E-02	na	--	--	2.8E-02	na	--	--	--	--	--	--	--	--	--	--	2.8E-02	na	--
PCB-1260	0	--	1.4E-02	na	--	--	2.8E-02	na	--	--	--	--	--	--	--	--	--	--	2.8E-02	na	--
PCB Total[c]	0	--	--	na	1.7E-03	--	--	na	3.4E-03	--	--	--	--	--	--	--	--	--	--	na	3.4E-03

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Pentachlorophenol [C]	0	7.7E-03	5.9E-03	na	8.2E+01	1.5E-02	1.2E-02	na	1.6E+02	--	--	--	--	--	--	--	--	1.5E-02	1.2E-02	na	1.6E+02
Phenol	0	--	--	na	4.6E+06	--	--	na	9.2E+06	--	--	--	--	--	--	--	--	--	--	na	9.2E+06
Pyrene	0	--	--	na	1.1E+04	--	--	na	2.2E+04	--	--	--	--	--	--	--	--	--	--	na	2.2E+04
Radionuclides (pCi/l except Beta/Photon)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity	0	--	--	na	1.5E+01	--	--	na	3.0E+01	--	--	--	--	--	--	--	--	--	--	na	3.0E+01
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	8.0E+00	--	--	--	--	--	--	--	--	--	--	na	8.0E+00
Strontium-90	0	--	--	na	8.0E+00	--	--	na	1.6E+01	--	--	--	--	--	--	--	--	--	--	na	1.6E+01
Tritium	0	--	--	na	2.0E+04	--	--	na	4.0E+04	--	--	--	--	--	--	--	--	--	--	na	4.0E+04
Selenium	0	2.0E+01	5.0E+00	na	1.1E+04	4.0E+01	1.0E+01	na	2.2E+04	--	--	--	--	--	--	--	--	4.0E+01	1.0E+01	na	2.2E+04
Silver	0	1.4E+00	--	na	--	2.8E+00	--	na	--	--	--	--	--	--	--	--	--	2.8E+00	--	na	--
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,1,2,2-Tetrachloroethane [C]	0	--	--	na	1.1E+02	--	--	na	2.2E+02	--	--	--	--	--	--	--	--	--	--	na	2.2E+02
Tetrachloroethylene [C]	0	--	--	na	8.9E+01	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	--	--	na	1.8E+02
Thallium	0	--	--	na	6.3E+00	--	--	na	1.3E+01	--	--	--	--	--	--	--	--	--	--	na	1.3E+01
Toluene	0	--	--	na	2.0E+05	--	--	na	4.0E+05	--	--	--	--	--	--	--	--	--	--	na	4.0E+05
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Toxaphene [C]	0	7.3E-01	2.0E-04	na	7.5E-03	1.5E+00	4.0E-04	na	1.5E-02	--	--	--	--	--	--	--	--	1.5E+00	4.0E-04	na	1.5E-02
Tributyltin	0	4.6E-01	6.3E-02	na	--	9.2E-01	1.3E-01	na	--	--	--	--	--	--	--	--	--	9.2E-01	1.3E-01	na	--
1,2,4-Trichlorobenzene	0	--	--	na	9.4E+02	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03
1,1,2-Trichloroethane [C]	0	--	--	na	4.2E+02	--	--	na	8.4E+02	--	--	--	--	--	--	--	--	--	--	na	8.4E+02
Trichloroethylene [C]	0	--	--	na	8.1E+02	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03
2,4,6-Trichlorophenol [C]	0	--	--	na	6.5E+01	--	--	na	1.3E+02	--	--	--	--	--	--	--	--	--	--	na	1.3E+02
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Vinyl Chloride [C]	0	--	--	na	6.1E+01	--	--	na	1.2E+02	--	--	--	--	--	--	--	--	--	--	na	1.2E+02
Zinc	0	7.5E+01	7.6E+01	na	6.9E+04	1.5E+02	1.5E+02	na	1.4E+05	--	--	--	--	--	--	--	--	1.5E+02	1.5E+02	na	1.4E+05

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

Metal	Target Value (SSTV)
Antimony	8.6E+03
Arsenic	1.8E+02
Barium	na
Cadmium	9.0E-01
Chromium III	5.8E+01
Chromium VI	1.3E+01
Copper	6.5E+00
Iron	na
Lead	8.3E+00
Manganese	na
Mercury	1.0E-01
Nickel	1.6E+01
Selenium	6.0E+00
Silver	1.1E+00
Zinc	6.0E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Dominion Power Possum Point Permit No.: VA0002071

Receiving Stream: Potomac River Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =	118	mg/L
90% Temperature (Annual) =	7.6	deg C
90% Temperature (Wet season) =	7	deg C
90% Maximum pH =	7.6	SU
10% Maximum pH =		SU
Tier Designation (1 or 2) =	1	
Public Water Supply (PWS) Y/N? =	n	
Trout Present Y/N? =	n	
Early Life Stages Present Y/N? =	y	

Stream Flows

1Q10 (Annual) =	49	MGD
7Q10 (Annual) =	49	MGD
30Q10 (Annual) =	49	MGD
1Q10 (Wet season) =	49	MGD
30Q10 (Wet season)	49	MGD
30Q5 =	49	MGD
Harmonic Mean =	49	MGD
Annual Average =	n/a	MGD

Mixing Information

Annual - 1Q10 Mix =	100	%
- 7Q10 Mix =	100	%
- 30Q10 Mix =	100	%
Wet Season - 1Q10 Mix =	100	%
- 30Q10 Mix =	100	%

50:1 dilution

Effluent Information

Mean Hardness (as CaCO3) =		mg/L
90% Temp (Annual) =		deg C
90% Temp (Wet season) =		deg C
90% Maximum pH =		SU
10% Maximum pH =		SU
Discharge Flow =	1	MGD

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	0	--	--	na	2.7E+03	--	--	na	1.4E+05	--	--	--	--	--	--	--	--	--	--	na	1.4E+05
Acrolein	0	--	--	na	7.8E+02	--	--	na	3.9E+04	--	--	--	--	--	--	--	--	--	--	na	3.9E+04
Acrylonitrile[C]	0	--	--	na	6.6E+00	--	--	na	3.3E+02	--	--	--	--	--	--	--	--	--	--	na	3.3E+02
Aldrin [C]	0	3.0E+00	--	na	1.4E-03	1.5E+02	--	na	7.0E-02	--	--	--	--	--	--	--	--	1.5E+02	--	na	7.0E-02
Ammonia-N (mg/l) (Yearly)	0	5.84E+01	7.09E+00	na	--	2.9E+03	3.5E+02	na	--	--	--	--	--	--	--	--	--	2.9E+03	3.5E+02	na	--
Ammonia-N (mg/l) (High Flow)	0	5.84E+01	7.09E+00	na	--	2.9E+03	3.5E+02	na	--	--	--	--	--	--	--	--	--	2.9E+03	3.5E+02	na	--
Anthracene	0	--	--	na	1.1E+05	--	--	na	5.5E+06	--	--	--	--	--	--	--	--	--	--	na	5.5E+06
Antimony	0	--	--	na	4.3E+03	--	--	na	2.2E+05	--	--	--	--	--	--	--	--	--	--	na	2.2E+05
Arsenic	o	3.4E+02	1.5E+02	na	--	1.7E+04	7.5E+03	na	--	--	--	--	--	--	--	--	--	1.7E+04	7.5E+03	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene [C]	0	--	--	na	7.1E+02	--	--	na	3.6E+04	--	--	--	--	--	--	--	--	--	--	na	3.6E+04
Benzidine[C]	0	--	--	na	5.4E-03	--	--	na	2.7E-01	--	--	--	--	--	--	--	--	--	--	na	2.7E-01
Benzo (a) anthracene [C]	0	--	--	na	4.9E-01	--	--	na	2.5E+01	--	--	--	--	--	--	--	--	--	--	na	2.5E+01
Benzo (b) fluoranthene [C]	0	--	--	na	4.9E-01	--	--	na	2.5E+01	--	--	--	--	--	--	--	--	--	--	na	2.5E+01
Benzo (k) fluoranthene [C]	0	--	--	na	4.9E-01	--	--	na	2.5E+01	--	--	--	--	--	--	--	--	--	--	na	2.5E+01
Benzo (a) pyrene [C]	0	--	--	na	4.9E-01	--	--	na	2.5E+01	--	--	--	--	--	--	--	--	--	--	na	2.5E+01
Bis2-Chloroethyl Ether	0	--	--	na	1.4E+01	--	--	na	7.0E+02	--	--	--	--	--	--	--	--	--	--	na	7.0E+02
Bis2-Chloroisopropyl Ether	0	--	--	na	1.7E+05	--	--	na	8.5E+06	--	--	--	--	--	--	--	--	--	--	na	8.5E+06
Bromoform [C]	0	--	--	na	3.6E+03	--	--	na	1.8E+05	--	--	--	--	--	--	--	--	--	--	na	1.8E+05
Butylbenzylphthalate	0	--	--	na	5.2E+03	--	--	na	2.6E+05	--	--	--	--	--	--	--	--	--	--	na	2.6E+05
Cadmium	0	4.6E+00	1.3E+00	na	--	2.3E+02	6.4E+01	na	--	--	--	--	--	--	--	--	--	2.3E+02	6.4E+01	na	--
Carbon Tetrachloride [C]	0	--	--	na	4.4E+01	--	--	na	2.2E+03	--	--	--	--	--	--	--	--	--	--	na	2.2E+03
Chlordane [C]	0	2.4E+00	4.3E-03	na	2.2E-02	1.2E+02	2.2E-01	na	1.1E+00	--	--	--	--	--	--	--	--	1.2E+02	2.2E-01	na	1.1E+00
Chloride	0	8.6E+05	2.3E+05	na	--	4.3E+07	1.2E+07	na	--	--	--	--	--	--	--	--	--	4.3E+07	1.2E+07	na	--
TRC	0	1.9E+01	1.1E+01	na	--	9.5E+02	5.5E+02	na	--	--	--	--	--	--	--	--	--	9.5E+02	5.5E+02	na	--
Chlorobenzene	0	--	--	na	2.1E+04	--	--	na	1.1E+06	--	--	--	--	--	--	--	--	--	--	na	1.1E+06

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane[C]	0	--	--	na	3.4E+02	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
Chloroform [C]	0	--	--	na	2.9E+04	--	--	na	1.5E+06	--	--	--	--	--	--	--	--	--	--	na	1.5E+06
2-Chloronaphthalene	0	--	--	na	4.3E+03	--	--	na	2.2E+05	--	--	--	--	--	--	--	--	--	--	na	2.2E+05
2-Chlorophenol	0	--	--	na	4.0E+02	--	--	na	2.0E+04	--	--	--	--	--	--	--	--	--	--	na	2.0E+04
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	4.2E+00	2.1E+00	na	--	--	--	--	--	--	--	--	--	4.2E+00	2.1E+00	na	--
Chromium III	0	6.4E+02	8.3E+01	na	--	3.2E+04	4.2E+03	na	--	--	--	--	--	--	--	--	--	3.2E+04	4.2E+03	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	8.0E+02	5.5E+02	na	--	--	--	--	--	--	--	--	--	8.0E+02	5.5E+02	na	--
Chromium, Total	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene [C]	0	--	--	na	4.9E-01	--	--	na	2.5E+01	--	--	--	--	--	--	--	--	--	--	na	2.5E+01
Copper	0	1.5E+01	1.0E+01	na	--	7.7E+02	5.1E+02	na	--	--	--	--	--	--	--	--	--	7.7E+02	5.1E+02	na	--
Cyanide	0	2.2E+01	5.2E+00	na	2.2E+05	1.1E+03	2.6E+02	na	1.1E+07	--	--	--	--	--	--	--	--	1.1E+03	2.6E+02	na	1.1E+07
DDD [C]	0	--	--	na	8.4E-03	--	--	na	4.2E-01	--	--	--	--	--	--	--	--	--	--	na	4.2E-01
DDE [C]	0	--	--	na	5.9E-03	--	--	na	3.0E-01	--	--	--	--	--	--	--	--	--	--	na	3.0E-01
DDT [C]	0	1.1E+00	1.0E-03	na	5.9E-03	5.5E+01	5.0E-02	na	3.0E-01	--	--	--	--	--	--	--	--	5.5E+01	5.0E-02	na	3.0E-01
Demeton	0	--	1.0E-01	na	--	--	5.0E+00	na	--	--	--	--	--	--	--	--	--	--	5.0E+00	na	--
Dibenz(a,h)anthracene [C]	0	--	--	na	4.9E-01	--	--	na	2.5E+01	--	--	--	--	--	--	--	--	--	--	na	2.5E+01
Dibutyl phthalate	0	--	--	na	1.2E+04	--	--	na	6.0E+05	--	--	--	--	--	--	--	--	--	--	na	6.0E+05
Dichloromethane (Methylene Chloride) [C]	0	--	--	na	1.6E+04	--	--	na	8.0E+05	--	--	--	--	--	--	--	--	--	--	na	8.0E+05
1,2-Dichlorobenzene	0	--	--	na	1.7E+04	--	--	na	8.5E+05	--	--	--	--	--	--	--	--	--	--	na	8.5E+05
1,3-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	1.3E+05	--	--	--	--	--	--	--	--	--	--	na	1.3E+05
1,4-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	1.3E+05	--	--	--	--	--	--	--	--	--	--	na	1.3E+05
3,3-Dichlorobenzidine[C]	0	--	--	na	7.7E-01	--	--	na	3.9E+01	--	--	--	--	--	--	--	--	--	--	na	3.9E+01
Dichlorobromomethane [C]	0	--	--	na	4.6E+02	--	--	na	2.3E+04	--	--	--	--	--	--	--	--	--	--	na	2.3E+04
1,2-Dichloroethane [C]	0	--	--	na	9.9E+02	--	--	na	5.0E+04	--	--	--	--	--	--	--	--	--	--	na	5.0E+04
1,1-Dichloroethylene	0	--	--	na	1.7E+04	--	--	na	8.5E+05	--	--	--	--	--	--	--	--	--	--	na	8.5E+05
1,2-trans-dichloroethylene	0	--	--	na	1.4E+05	--	--	na	7.0E+06	--	--	--	--	--	--	--	--	--	--	na	7.0E+06
2,4-Dichlorophenol	0	--	--	na	7.9E+02	--	--	na	4.0E+04	--	--	--	--	--	--	--	--	--	--	na	4.0E+04
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane[C]	0	--	--	na	3.9E+02	--	--	na	2.0E+04	--	--	--	--	--	--	--	--	--	--	na	2.0E+04
1,3-Dichloropropene	0	--	--	na	1.7E+03	--	--	na	8.5E+04	--	--	--	--	--	--	--	--	--	--	na	8.5E+04
Dieldrin [C]	0	2.4E-01	5.6E-02	na	1.4E-03	1.2E+01	2.8E+00	na	7.0E-02	--	--	--	--	--	--	--	--	1.2E+01	2.8E+00	na	7.0E-02
Diethyl Phthalate	0	--	--	na	1.2E+05	--	--	na	6.0E+06	--	--	--	--	--	--	--	--	--	--	na	6.0E+06
Di-2-Ethylhexyl Phthalate [C]	0	--	--	na	5.9E+01	--	--	na	3.0E+03	--	--	--	--	--	--	--	--	--	--	na	3.0E+03
2,4-Dimethylphenol	0	--	--	na	2.3E+03	--	--	na	1.2E+05	--	--	--	--	--	--	--	--	--	--	na	1.2E+05
Dimethyl Phthalate	0	--	--	na	2.9E+06	--	--	na	1.5E+08	--	--	--	--	--	--	--	--	--	--	na	1.5E+08
Di-n-Butyl Phthalate	0	--	--	na	1.2E+04	--	--	na	6.0E+05	--	--	--	--	--	--	--	--	--	--	na	6.0E+05
2,4 Dinitrophenol	0	--	--	na	1.4E+04	--	--	na	7.0E+05	--	--	--	--	--	--	--	--	--	--	na	7.0E+05
2-Methyl-4,6-Dinitrophenol	0	--	--	na	7.65E+02	--	--	na	3.8E+04	--	--	--	--	--	--	--	--	--	--	na	3.8E+04
2,4-Dinitrotoluene [C]	0	--	--	na	9.1E+01	--	--	na	4.6E+03	--	--	--	--	--	--	--	--	--	--	na	4.6E+03
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin) (ppq)	0	--	--	na	1.2E-06	--	--	na	na	--	--	--	--	--	--	--	--	--	--	na	na
1,2-Diphenylhydrazine[C]	0	--	--	na	5.4E+00	--	--	na	2.7E+02	--	--	--	--	--	--	--	--	--	--	na	2.7E+02
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	1.1E+01	2.8E+00	na	1.2E+04	--	--	--	--	--	--	--	--	1.1E+01	2.8E+00	na	1.2E+04
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	1.1E+01	2.8E+00	na	1.2E+04	--	--	--	--	--	--	--	--	1.1E+01	2.8E+00	na	1.2E+04
Endosulfan Sulfate	0	--	--	na	2.4E+02	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	1.2E+04
Endrin	0	8.6E-02	3.6E-02	na	8.1E-01	4.3E+00	1.8E+00	na	4.1E+01	--	--	--	--	--	--	--	--	4.3E+00	1.8E+00	na	4.1E+01
Endrin Aldehyde	0	--	--	na	8.1E-01	--	--	na	4.1E+01	--	--	--	--	--	--	--	--	--	--	na	4.1E+01

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.9E+04	--	--	na	1.5E+06	--	--	--	--	--	--	--	--	--	--	na	1.5E+06
Fluoranthene	0	--	--	na	3.7E+02	--	--	na	1.9E+04	--	--	--	--	--	--	--	--	--	--	na	1.9E+04
Fluorene	0	--	--	na	1.4E+04	--	--	na	7.0E+05	--	--	--	--	--	--	--	--	--	--	na	7.0E+05
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	5.0E-01	na	--	--	--	--	--	--	--	--	--	--	5.0E-01	na	--
Heptachlor [C]	0	5.2E-01	3.8E-03	na	2.1E-03	2.6E+01	1.9E-01	na	1.1E-01	--	--	--	--	--	--	--	--	2.6E+01	1.9E-01	na	1.1E-01
Heptachlor Epoxide [C]	0	5.2E-01	3.8E-03	na	1.1E-03	2.6E+01	1.9E-01	na	5.5E-02	--	--	--	--	--	--	--	--	2.6E+01	1.9E-01	na	5.5E-02
Hexachlorobenzene [C]	0	--	--	na	7.7E-03	--	--	na	3.9E-01	--	--	--	--	--	--	--	--	--	--	na	3.9E-01
Hexachlorobutadiene [C]	0	--	--	na	5.0E+02	--	--	na	2.5E+04	--	--	--	--	--	--	--	--	--	--	na	2.5E+04
Hexachlorocyclohexane Alpha-BHC [C]	0	--	--	na	1.3E-01	--	--	na	6.5E+00	--	--	--	--	--	--	--	--	--	--	na	6.5E+00
Hexachlorocyclohexane Beta-BHC [C]	0	--	--	na	4.6E-01	--	--	na	2.3E+01	--	--	--	--	--	--	--	--	--	--	na	2.3E+01
Hexachlorocyclohexane Gamma-BHC [C] (Lindane)	0	9.5E-01	na	na	6.3E-01	4.8E+01	--	na	3.2E+01	--	--	--	--	--	--	--	--	4.8E+01	--	na	3.2E+01
Hexachlorocyclopentadiene	0	--	--	na	1.7E+04	--	--	na	8.5E+05	--	--	--	--	--	--	--	--	--	--	na	8.5E+05
Hexachloroethane [C]	0	--	--	na	8.9E+01	--	--	na	4.5E+03	--	--	--	--	--	--	--	--	--	--	na	4.5E+03
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	1.0E+02	na	--	--	--	--	--	--	--	--	--	--	1.0E+02	na	--
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	4.9E-01	--	--	na	2.5E+01	--	--	--	--	--	--	--	--	--	--	na	2.5E+01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone [C]	0	--	--	na	2.6E+04	--	--	na	1.3E+06	--	--	--	--	--	--	--	--	--	--	na	1.3E+06
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	1.4E+02	1.6E+01	na	--	7.2E+03	8.1E+02	na	--	--	--	--	--	--	--	--	--	7.2E+03	8.1E+02	na	--
Malathion	0	--	1.0E-01	na	--	--	5.0E+00	na	--	--	--	--	--	--	--	--	--	--	5.0E+00	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	na	5.1E-02	7.0E+01	3.9E+01	na	2.6E+00	--	--	--	--	--	--	--	--	7.0E+01	3.9E+01	na	2.6E+00
Methyl Bromide	0	--	--	na	4.0E+03	--	--	na	2.0E+05	--	--	--	--	--	--	--	--	--	--	na	2.0E+05
Methoxychlor	0	--	3.0E-02	na	--	--	1.5E+00	na	--	--	--	--	--	--	--	--	--	--	1.5E+00	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Monochlorobenzene	0	--	--	na	2.1E+04	--	--	na	1.1E+06	--	--	--	--	--	--	--	--	--	--	na	1.1E+06
Nickel	0	2.1E+02	2.3E+01	na	4.6E+03	1.0E+04	1.1E+03	na	2.3E+05	--	--	--	--	--	--	--	--	1.0E+04	1.1E+03	na	2.3E+05
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	1.9E+03	--	--	na	9.5E+04	--	--	--	--	--	--	--	--	--	--	na	9.5E+04
N-Nitrosodimethylamine [C]	0	--	--	na	8.1E+01	--	--	na	4.1E+03	--	--	--	--	--	--	--	--	--	--	na	4.1E+03
N-Nitrosodiphenylamine [C]	0	--	--	na	1.6E+02	--	--	na	8.0E+03	--	--	--	--	--	--	--	--	--	--	na	8.0E+03
N-Nitrosodi-n-propylamine [C]	0	--	--	na	1.4E+01	--	--	na	7.0E+02	--	--	--	--	--	--	--	--	--	--	na	7.0E+02
Parathion	0	6.5E-02	1.3E-02	na	--	3.3E+00	6.5E-01	na	--	--	--	--	--	--	--	--	--	3.3E+00	6.5E-01	na	--
PCB-1016	0	--	1.4E-02	na	--	--	7.0E-01	na	--	--	--	--	--	--	--	--	--	--	7.0E-01	na	--
PCB-1221	0	--	1.4E-02	na	--	--	7.0E-01	na	--	--	--	--	--	--	--	--	--	--	7.0E-01	na	--
PCB-1232	0	--	1.4E-02	na	--	--	7.0E-01	na	--	--	--	--	--	--	--	--	--	--	7.0E-01	na	--
PCB-1242	0	--	1.4E-02	na	--	--	7.0E-01	na	--	--	--	--	--	--	--	--	--	--	7.0E-01	na	--
PCB-1248	0	--	1.4E-02	na	--	--	7.0E-01	na	--	--	--	--	--	--	--	--	--	--	7.0E-01	na	--
PCB-1254	0	--	1.4E-02	na	--	--	7.0E-01	na	--	--	--	--	--	--	--	--	--	--	7.0E-01	na	--
PCB-1260	0	--	1.4E-02	na	--	--	7.0E-01	na	--	--	--	--	--	--	--	--	--	--	7.0E-01	na	--
PCB Total [C]	0	--	--	na	1.7E-03	--	--	na	8.5E-02	--	--	--	--	--	--	--	--	--	--	na	8.5E-02

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Pentachlorophenol [C]	0	7.7E-03	5.9E-03	na	8.2E+01	3.8E-01	2.9E-01	na	4.1E+03	--	--	--	--	--	--	--	--	3.8E-01	2.9E-01	na	4.1E+03
Phenol	0	--	--	na	4.6E+06	--	--	na	2.3E+08	--	--	--	--	--	--	--	--	--	--	na	2.3E+08
Pyrene	0	--	--	na	1.1E+04	--	--	na	5.5E+05	--	--	--	--	--	--	--	--	--	--	na	5.5E+05
Radionuclides (pCi/l except Beta/Photon)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity	0	--	--	na	1.5E+01	--	--	na	7.5E+02	--	--	--	--	--	--	--	--	--	--	na	7.5E+02
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	2.0E+02	--	--	--	--	--	--	--	--	--	--	na	2.0E+02
Strontium-90	0	--	--	na	8.0E+00	--	--	na	4.0E+02	--	--	--	--	--	--	--	--	--	--	na	4.0E+02
Tritium	0	--	--	na	2.0E+04	--	--	na	1.0E+06	--	--	--	--	--	--	--	--	--	--	na	1.0E+06
Selenium	0	2.0E+01	5.0E+00	na	1.1E+04	1.0E+03	2.5E+02	na	5.5E+05	--	--	--	--	--	--	--	--	1.0E+03	2.5E+02	na	5.5E+05
Silver	0	4.4E+00	--	na	--	2.2E+02	--	na	--	--	--	--	--	--	--	--	--	2.2E+02	--	na	--
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,1,2,2-Tetrachloroethane [C]	0	--	--	na	1.1E+02	--	--	na	5.5E+03	--	--	--	--	--	--	--	--	--	--	na	5.5E+03
Tetrachloroethylene [C]	0	--	--	na	8.9E+01	--	--	na	4.5E+03	--	--	--	--	--	--	--	--	--	--	na	4.5E+03
Thallium	0	--	--	na	6.3E+00	--	--	na	3.2E+02	--	--	--	--	--	--	--	--	--	--	na	3.2E+02
Toluene	0	--	--	na	2.0E+05	--	--	na	1.0E+07	--	--	--	--	--	--	--	--	--	--	na	1.0E+07
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Toxaphene [C]	0	7.3E-01	2.0E-04	na	7.5E-03	3.7E+01	1.0E-02	na	3.8E-01	--	--	--	--	--	--	--	--	3.7E+01	1.0E-02	na	3.8E-01
Tributyltin	0	4.6E-01	6.3E-02	na	--	2.3E+01	3.2E+00	na	--	--	--	--	--	--	--	--	--	2.3E+01	3.2E+00	na	--
1,2,4-Trichlorobenzene	0	--	--	na	9.4E+02	--	--	na	4.7E+04	--	--	--	--	--	--	--	--	--	--	na	4.7E+04
1,1,2-Trichloroethane [C]	0	--	--	na	4.2E+02	--	--	na	2.1E+04	--	--	--	--	--	--	--	--	--	--	na	2.1E+04
Trichloroethylene [C]	0	--	--	na	8.1E+02	--	--	na	4.1E+04	--	--	--	--	--	--	--	--	--	--	na	4.1E+04
2,4,6-Trichlorophenol [C]	0	--	--	na	6.5E+01	--	--	na	3.3E+03	--	--	--	--	--	--	--	--	--	--	na	3.3E+03
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Vinyl Chloride [C]	0	--	--	na	6.1E+01	--	--	na	3.1E+03	--	--	--	--	--	--	--	--	--	--	na	3.1E+03
Zinc	0	1.3E+02	1.3E+02	na	6.9E+04	6.6E+03	6.7E+03	na	3.5E+06	--	--	--	--	--	--	--	--	6.6E+03	6.7E+03	na	3.5E+06

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information. Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

Metal	Target Value (SSTV)
Antimony	2.2E+05
Arsenic	4.5E+03
Barium	na
Cadmium	3.8E+01
Chromium III	2.5E+03
Chromium VI	3.2E+02
Copper	3.0E+02
Iron	na
Lead	4.9E+02
Manganese	na
Mercury	2.6E+00
Nickel	6.9E+02
Selenium	1.5E+02
Silver	8.9E+01
Zinc	2.7E+03

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Thompson,Alison

From: Kimberly_Q_Lanterman@Dom.com

Sent: Friday, October 20, 2006 2:20 PM

To: Thompson,Alison

Cc: Jeffrey_R_Marcell@Dom.com; Keith_M._Homza@Dom.com; Bob_Williams@Dom.com; Robert_M_Bisha@Dom.com

Subject: RE: Re: Responses to Questions Raised by DEQ During Possum Point Site Visit on August 7, 2006

Hello Allison - Per your email request (at the bottom of the email below), we have re-evaluated the heat rejection limits for Units 1-4 at the Possum Point Power Station. The results of this re-evaluation are provided below. This re-evaluation was performed by the F&H Engineering and Operations Excellence group at Dominion.

Possum Point Units 1&2 :

Dominion's recommendation is to reduce the current permitted heat rejection limit for Units 1&2 down to the estimated, maximum amount of energy generated as the result of the operation of the existing circulating water pumps that are still in-service and are used periodically, plus a safety margin. A 20% safety margin (0.20) is added to the calculations to account for equipment inefficiencies and any inaccuracy in the various inputs to the calculations. The new permit limit should be **11.1 mmBtu/hr x 1.2 safety margin = 13.3 mmBtu/hr per unit.**

The calculations below show how the maximum energy generated by the circulating water pumps was derived:

Circ Water Pump Calculations:

	Pump Running During the Month	Heat Rejection mmBtu/hr	Pump Capacity gpm	Pump Efficiency %	Pump Head - ft	Temp. Rise °F
Unit 1	N	**11.1**	39,300	76%	23	0.563
Unit 2	N	**11.1**	39,300	76%	23	0.563

Note: Data for pump head calculations based on information from PP2 S&W Plant Manual.

Example Calculations:

Temperature Rise Across C.W. Pump = H/778 x (1/e - 1), where: T = temperature rise (deg F/min), H = Total D and e = Pump Efficiency at a given capacity (%/100)

T_rise = 23.1/778 x (1/0.76 - 1) = 9.376268 x 10^-3 per minute of pump operation **or** T_rise for each hour of oper mins. = **0.563 deg F/hr per pump**

Total Heat Gain by C.W. from 1 Pump Operation per hour = 1 pump x 39,300 gpm x 500 x 1.0 x 0.563 = 1 x 11.0 Btu/hr = **1.11 E7 Btu/hr Total Heat Gain**

Possum Point Units 3&4 :

Maximum heat inputs were evaluated using Power Software Associates, Inc. heat balance software(F-Cycle) computer modeling to generate As-Built operating conditions of the units, including the impacts of conversion from coal firing to gas. These new heat balances were than used to generate operational performance curves for the

following:

Throttle Flow vs Gross Generation
Condenser Heat Load vs Throttle Flow
Condenser Design Back Pressure vs Heat Load @ CW Inlet Temperatures, °F

Next, using the above curves along with the manufacturer's performance curves for the steam turbine(i.e.,Heat Rate Deviation(%) vs Back Pressure('Hg) @ Throttle Flow (lb/hr), the graph of operating performance (i.e., Condenser Heat Rejection vs. Gross Load @ Condenser Back Pressure) was created.
On this graph, the Maximum Heat Rejection limit and operating conditions that approach that limit are indicated. The monthly heat rejection report generated by the Station uses this graph and operating inputs of Gross Load and Back Pressure during the month to calculate the maximum heat rejection that occurred during the month.

The re-evaluation for Units 3&4 confirmed that the current permitted heat rejection limits are still valid. These limits are based on maximum operating conditions (as discussed above and illustrated in the attached spreadsheets/graphs).

The heat balances for Units 3&4 are attached;
PP3 PP4

The spreadsheets for the graphs and curve fits from these heat balances are attached:

PP3 PP4

In summary, based on the results of the heat rejection re-evaluation for Units 1-4 at the Possum Point Power Station, Dominion recommends the following:

- Revise permitted heat rejection limits for Units 1&2 to 13.3 mmBtu/hr per unit (as documented above).
- Maintain current permitted heat rejection limits for Units 3&4 (as documented above).

Since the heat contribution from Units 1&2 is negligible, we will continue reporting the actual heat rejected from these units as zero on the monthly DMRs (taking significant figures into consideration). However, we will indicate on the heat rejection reports maintained by the Station whether or not the Unit 1 and 2 pumps operated during a particular month. If DEQ has an issue with this approach, please let us know.

If you have any questions regarding the information provided, please let us know. We look forward to working with you on finalizing the VPDES permit renewal for the Station.

Have a nice day!

Kim Lanterman
Dominion
Electric Environmental Services
Direct Dial: 804-273-3051
Email: Kimberly_Q_Lanterman@dom.com

"Thompson,Alison" <althompson@deq.virginia.gov>

09/11/2006 10:01 AM

To <Kimberly_Q_Lanterman@Dom.com>

cc <Bob_Williams@Dom.com>, <Jeffrey_R_Marcell@Dom.com>,

"Thompson,Alison" <althompson@deq.virginia.gov>

Subject RE: Re: Responses to Questions Raised by DEQ During Possum Point Site Visit on August 7, 2006

Hello Allison - Below is a list of questions raised by DEQ during the site visit performed at the Possum Point Power Station on Monday, August 7, 2006. Your question is listed in bold italics and our response to each question is listed after the question in bold type.

1. Provide information on how the intake screens operate.

The Unit #1 Circulator Screen (which supplies make-up water to #5 Cooling Tower via the Weir) along with the screens for Units 3 and 4 are on a timed cycle - every 45 minutes the screens are washed for 15 minutes, the screens rotate continuously while the pumps are in service. The Unit 6 screen operates on differential pressure - pressure difference between the part of the screen submerged facing outside the screenwell compared to the submerged part of the screen on the inside of the screenwell. When the outside is higher than the inside, the screen is washed. The screen rotates continuously when the pump is in operation.

2. Determine purpose of pipes coming out of the bottom of the screen housing.

The pipes coming out of the bottom of the screens are bypasses for freeze protection for the wash supply water.

3. Determine whether or not the volumes and frequencies listed in Table 5 in Part 12 of the 2004 Modification Fact Sheet are still accurate. If not, please provide revised volumes and frequencies.

The volumes and frequencies listed in Table 5 in Part 12 of the 2004 Modification Fact Sheet are still relevant for everything but the filter cake. The filter cake has increased slightly from 40 cubic yards per week to approximately 50 cubic yards per week (when Unit 6 is operating). When Unit 6 is operating, the filter cake roll-off box is emptied three times per week, which equates to approximately 50 yards per week. Unit 6 operates approximately 30% of the year (30% capacity).

4. Provide a list of other stations in Virginia that allow grab sampling for toxicity samples.

Bremo Power Station (2 ash ponds), Chesapeake Power Station (ash pond), Chesterfied Power Station (stormwater pond and ash pond), Clover Power Station (leachate pond), North Anna Power Station (once through cooling water), and Yorktown Power Station (storm water discharge)

5. Provide the basis for the heat rejection calculation/value (i.e., how it is calculated/determined for Possum Point units).

We are still working on the response to this information request. We haven't been able to locate the data/information used for the original calculations for heat rejection for Units 1-4. If we are able to locate this information, we will forward it to you at that time. We plan to re-evaluate the heat rejection numbers for the station based upon current operation. Once complete, we will provide the results of this evaluation.

6. Determine purpose/past use of concrete pipe that goes out into the river next to the #1/#2 screenwell.

The past use of this concrete pipe has been investigated in the past and was investigated again per DEQ's request. We think that the pipe goes back to the beginning of the station's operation in the late 40's. However, we have not been able to find out any additional information about the pipe. The pipe no longer serves a purpose and does not discharge.

7. Please do something about the tree growing next to the oily waste pond.

The tree next to the oily waste pond has been removed.

8. Please provide a copy of the West Virginia AG opinion on Mt. Storm Lake.

A copy of the Mt. Storm 1968 AG Opinion was forwarded to Tom Faha (DEQ) by Jud White (Dominion) on September 5, 2006.

We believe that the above list of questions and responses cover all the outstanding issues that were raised by DEQ during the Possum Point site visit on August 7. We apologize for the delay in getting this information to you. If we missed anything, of if you have any additional questions, please contact Kim Lanterman at (804) 273-3051, Bob Williams at (804) 273-2994, or Jeff Marcell at (703) 441-3813. You may also contact any of us by email.

We look forward to working with you on the renewal of the Possum Point VPDES permit.

Have a nice day!

Kim Lanterman
Dominion
Electric Environmental Services
Direct Dial: 804-273-3051
Email: Kimberly_Q_Lanterman@dom.com

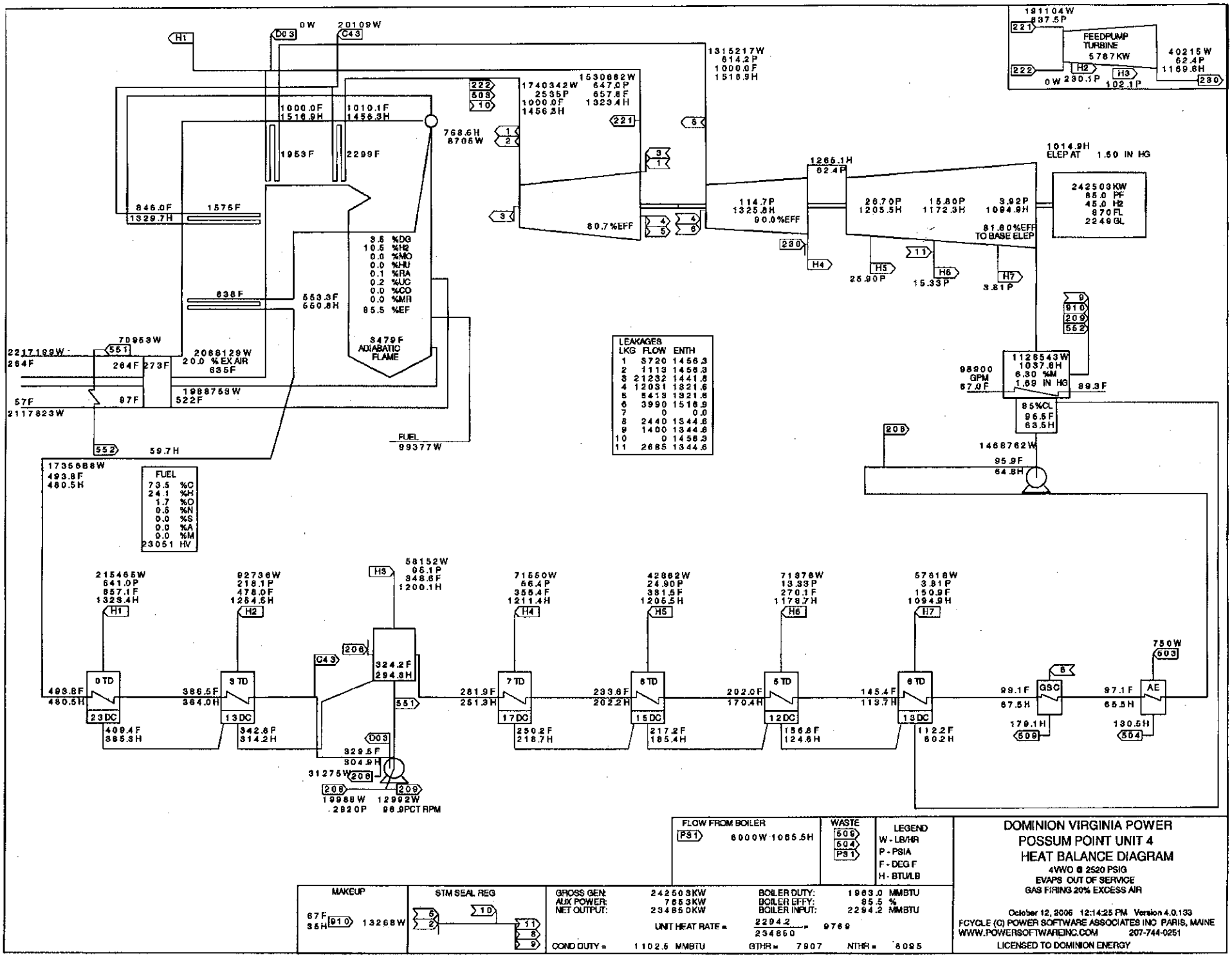
Kim,

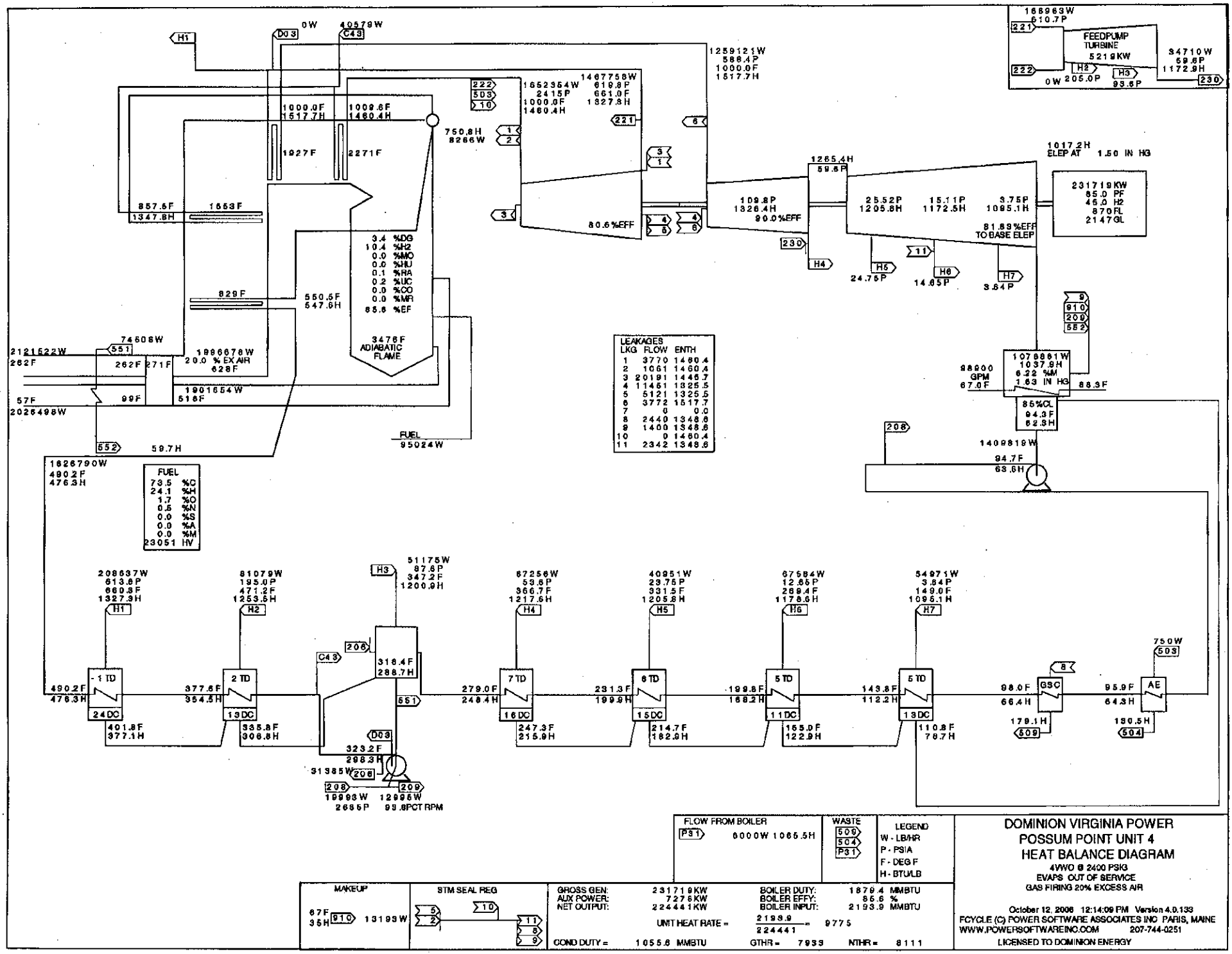
As we discussed on the phone this morning, Tom and I would like to have the heat rejection limits re-evaluated prior to reissuing the permit for the Possum Point Power Station. Please discuss with your folks at Dominion and let us know the approximate time line for completion.

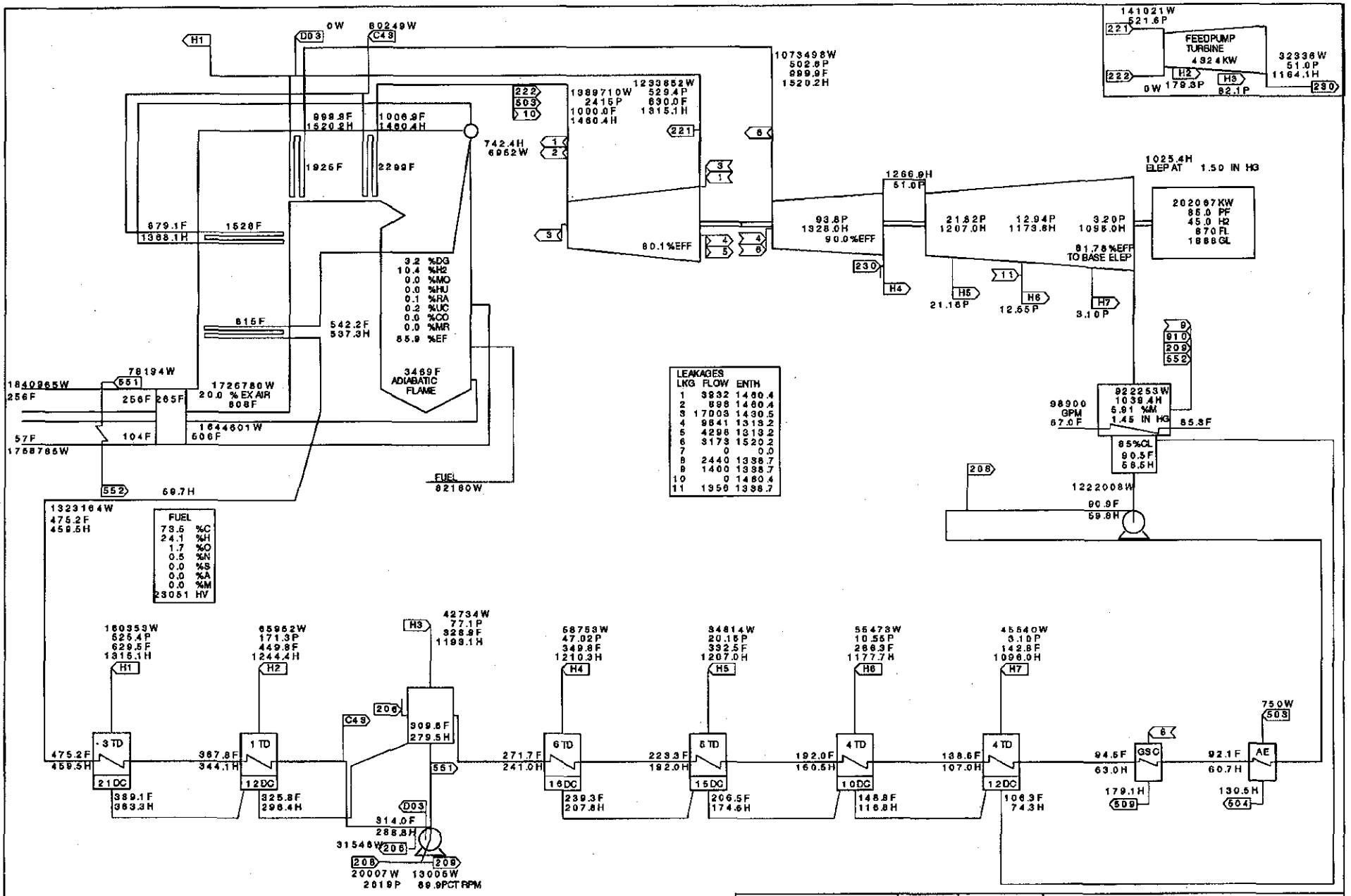
Thank you for your cooperation and feel free to contact me with any questions.

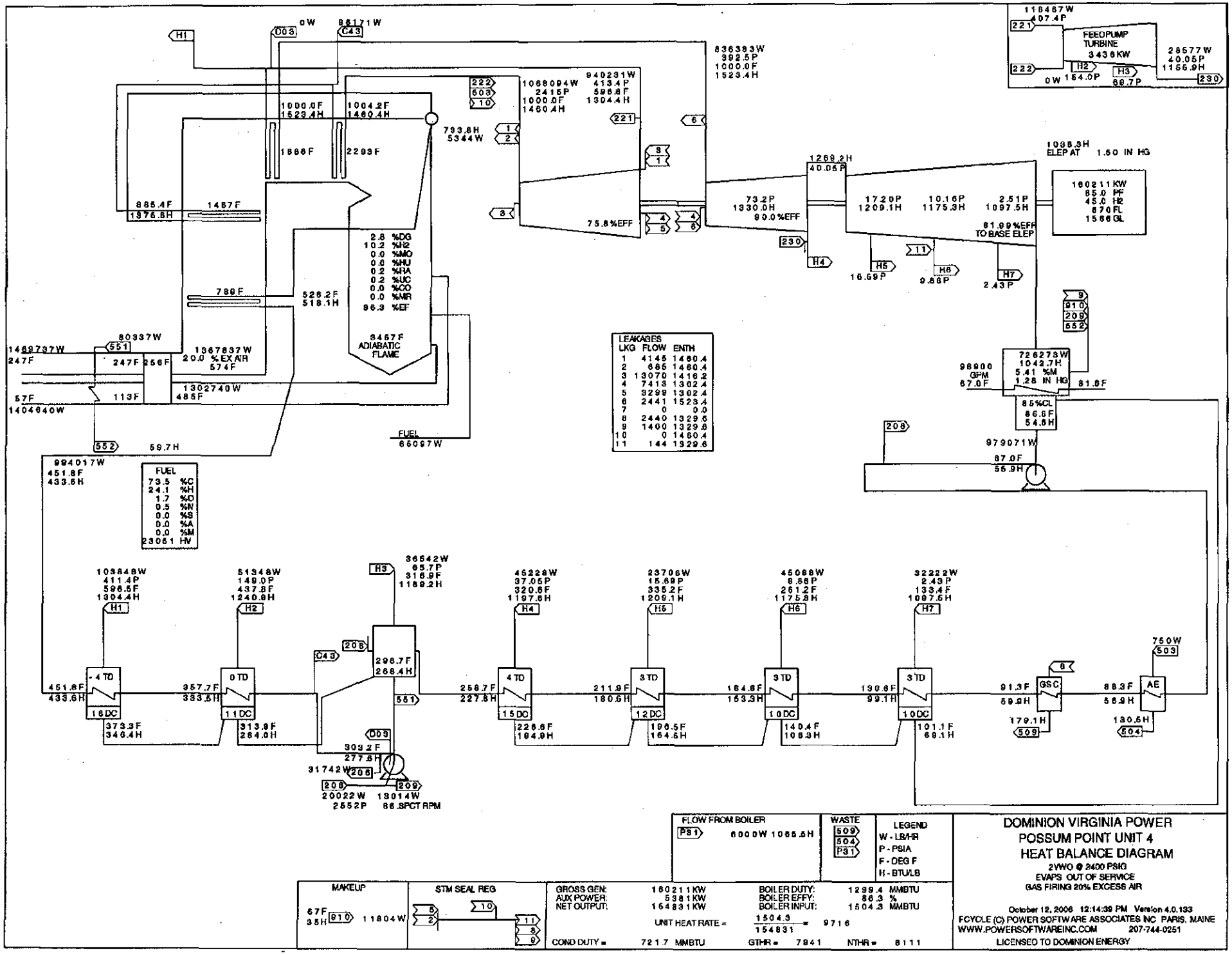
Alison

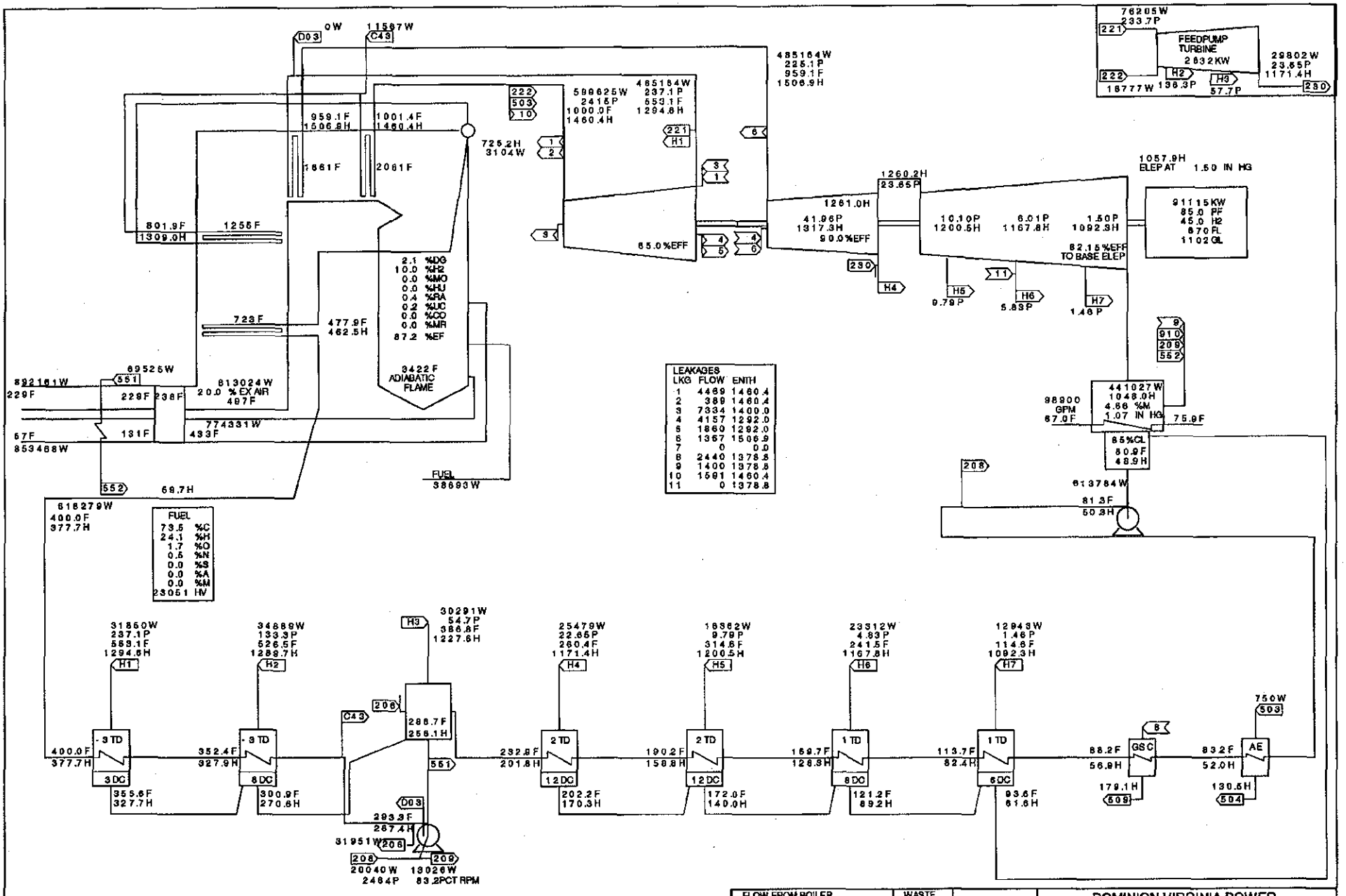
-----Original Message-----
From: Kimberly_Q_Lanterman@Dom.com [mailto:Kimberly_Q_Lanterman@Dom.com]
Sent: Thursday, September 07, 2006 12:56 PM
To: Thompson,Alison
Cc: Bob_Williams@Dom.com; Jeffrey_R_Marcell@Dom.com
Subject: Fw: Re: Responses to Questions Raised by DEQ During Possum Point Site Visit on August 7, 2006


FEEDPUMP TURBINE 5787KW
191104W 837.5P
40215W 62.4P 1169.8H
0W 230.1P 102.1P
0W 20109W
1315217W 614.2P 1000.0F 1516.9H
1530882W 647.0P 657.8F 1329.4H
1740342W 2535P 1000.0F 1456.3H
768.6H 8705W
1000.0F 1516.9H
1010.1F 1456.3H
1953F
2299F
846.0F 1329.7H
1575F
838F
553.3F 550.8H
3.5 %DG
10.5 %H2
0.0 %MO
0.0 %N2
0.1 %RA
0.2 %UC
0.0 %CO
0.0 %MR
85.5 %EF
3479F ADIABATIC FLAME
80.7%EFF
114.7P 1325.8H 90.0%EFF
1265.1H 62.4P
26.70P 1205.5H
15.80P 1172.3H
3.92P 1094.9H
81.60%EFF TO BASE ELEP
1014.9H ELEP AT 1.50 IN HG
242503KW 85.0 PF 45.0 H2 870 FL 2249 GL
25.90P
15.33P
3.81P
LEAKAGES
LKG FLOW ENTH
1 3720 1456.3
2 1113 1456.3
3 21232 1441.8
4 12031 1821.6
5 5413 1921.8
6 3990 1516.9
7 0 0.0
8 2440 1344.6
9 1400 1344.6
10 0 1456.3
11 2685 1344.6
70953W
2217199W 264F
264F 273F
2088129W 20.0 %EXAIR 635F
1988758W 522F
57F 2117823W
87F
FUEL 99377W
59.7H
1735888W 493.8F 480.5H
FUEL
73.5 %C
24.1 %H
1.7 %O
0.6 %N
0.0 %S
0.0 %A
0.0 %M
23051 HV
98900 GPM 67.0F
1126543W 1037.8H 6.30 %M 1.69 IN HG
89.3F
85%CL 96.5F 83.5H
1468762W 95.9F 64.8H
215465W 641.0P 857.1F 1323.4H
92736W 218.1P 478.0F 1264.5H
58152W 96.1P 348.8F 1200.1H
71550W 56.4P 355.4F 1211.4H
42862W 24.90P 381.5F 1206.5H
71378W 13.33P 270.1F 1178.7H
57818W 3.81P 150.9F 1094.9H
750W
0 TD
3 TD
7 TD
6 TD
5 TD
6 TD
GSC
AE
493.8F 480.5H
386.5F 364.0H
281.9F 251.3H
233.6F 202.2H
202.0F 170.4H
145.4F 119.7H
99.1F 87.5H
97.1F 85.5H
324.2F 294.8H
23 DC
13 DC
17 DC
15 DC
12 DC
13 DC
409.4F 385.3H
342.8F 314.2H
250.2F 218.7H
217.2F 185.4H
156.8F 124.8H
112.2F 80.2H
179.1H
130.5H
329.5F 304.9H
31275W
19988W .292.0P
12992W 98.9PCT RPM
FLOW FROM BOILER
PS1 6000W 1085.5H
WASTE
509
504
PS1
LEGEND
W - LB/HR
P - PSIA
F - DEG F
H - BTU/LB
MAKEUP
67F 85H 910 13268W
STM SEAL REG
GROSS GEN: 242503KW
AUX POWER: 7653KW
NET OUTPUT: 234850KW
BOILER DUTY: 1963.0 MMBTU
BOILER EFFY: 85.5 %
BOILER INPUT: 2294.2 MMBTU
UNIT HEAT RATE = 22942 / 234850 = 9769
COND DUTY = 1102.6 MMBTU
GTHR = 7907
NTHR = 8095
DOMINION VIRGINIA POWER
POSSUM POINT UNIT 4
HEAT BALANCE DIAGRAM
4VWO @ 2520 PSIG
EVAPS OUT OF SERVICE
GAS FIRING 20% EXCESS AIR
October 12, 2006 12:14:25 PM Version 4.0.133
FCYCLE (C) POWER SOFTWARE ASSOCIATES INC PARIS, MAINE
WWW.POWERSOFTWAREINC.COM 207-744-0251
LICENSED TO DOMINION ENERGY


H1
D03
C43
0W
40579W
1259121W
586.4P
1000.0F
1517.7H
1467758W
619.8P
661.0F
1327.8H
1652354W
2415P
1000.0F
1460.4H
222
503
10
221
6
1000.0F
1517.7H
1009.6F
1460.4H
750.8H
8266W
1
2
1927F
2271F
857.5F
1347.8H
1553F
3
1
3
80.6%EFF
4
5
4
6
109.8P
1326.4H
90.0%EFF
1265.4H
59.6P
25.52P
1205.8H
15.11P
1172.5H
3.75P
1095.1H
81.69%EFF
TO BASE ELEP
1017.2H
ELEP AT 1.50 IN HG
231719KW
85.0 PF
45.0 H2
870RL
2147GL
230
H4
H5
24.75P
11
H6
14.65P
H7
3.64P
168963W
610.7P
221
FEEDPUMP
TURBINE
5219KW
222
H2
0W 205.0P
H3
99.6P
34710W
59.6P
1172.9H
230
3.4 %DG
10.4 %H2
0.0 %MO
0.0 %HU
0.1 %RA
0.2 %UC
0.0 %CO
0.0 %MP
85.6 %EF
3476F
ADIABATIC
FLAME
829F
550.5F
547.6H
74608W
551
21215.22W
262F
262F
271F
1886678W
20.0 % EX AIR
628F
57F
2025498W
99F
1901654W
516F
FUEL
95024W
552
59.7H
1826790W
490.2F
476.3H
FUEL
73.5 %C
24.1 %H
1.7 %O
0.5 %N
0.0 %S
0.0 %A
0.0 %M
23051 HV
LEAKAGES
LKG FLOW ENTH
1 3770 1460.4
2 1061 1460.4
3 20191 1446.7
4 11451 1325.5
5 5121 1325.5
6 3772 1517.7
7 0 0.0
8 2440 1348.6
9 1400 1348.6
10 0 1460.4
11 2342 1348.6
9
910
209
582
1079861W
1037.9H
6.22 %M
1.63 IN HG
98000
GPM
67.0F
88.3F
85%CL
94.3F
62.3H
208
1409818W
94.7F
63.6H
208637W
613.6P
660.8F
1327.9H
H1
1 TD
490.2F
476.3H
24DC
401.8F
377.1H
81079W
195.0P
471.2F
1253.5H
H2
2 TD
377.6F
354.5H
13DC
335.8F
306.8H
51175W
87.6P
347.2F
1200.9H
H3
C43
208
316.4F
288.7H
551
D03
323.2F
298.3H
31385W
208
208
209
19993W
12995W
2665P
99.8PCT RPM
67256W
53.6P
366.7F
1217.6H
H4
7 TD
279.0F
248.4H
16DC
247.3F
215.9H
40951W
23.75P
331.5F
1205.8H
H5
6 TD
231.3F
199.9H
15DC
214.7F
182.9H
67584W
12.65P
289.4F
1178.6H
H6
5 TD
199.8F
168.2H
11DC
165.0F
122.9H
54971W
3.64P
149.0F
1095.1H
H7
5 TD
143.8F
112.2H
13DC
110.8F
78.7H
8
GSC
98.0F
66.4H
179.1H
509
750W
503
AE
95.9F
64.3H
180.5H
504
FLOW FROM BOILER
P31
6000W 1065.5H
WASTE
509
504
P31
LEGEND
W - LB/HR
P - PSIA
F - DEG F
H - BTU/LB
MAKEUP
67F
35H
910
13193W
STM SEAL REG
5
2
10
11
8
9
GROSS GEN: 231719KW
AUX POWER: 7276KW
NET OUTPUT: 224441KW
UNIT HEAT RATE = 2193.9 / 224441 = 9775
BOILER DUTY: 1879.4 MMBTU
BOILER EFFY: 85.6 %
BOILER INPUT: 2193.9 MMBTU
COND DUTY = 1055.6 MMBTU
GTHR = 7933
NTHR = 8111
DOMINION VIRGINIA POWER
POSSUM POINT UNIT 4
HEAT BALANCE DIAGRAM
4VWO @ 2400 PSIG
EVAPS OUT OF SERVICE
GAS FIRING 20% EXCESS AIR
October 12, 2006 12:14:09 PM Version 4.0.133
FCYCLE (C) POWER SOFTWARE ASSOCIATES INC PARIS, MAINE
WWW.POWERSOFTWAREINC.COM 207-744-0251
LICENSED TO DOMINION ENERGY


0W 80249W
D03
C49
H1
1073498W
502.8P
999.9F
1520.2H
1233852W
529.4P
690.0F
1315.1H
1989710W
2415P
1000.0F
1460.4H
222
503
10
221
6
742.4H
6952W
1
2
3
1
3
4
5
4
6
80.1%EFF
998.8F
1520.2H
1006.9F
1460.4H
1925F
2299F
879.1F
1368.1H
1526F
615F
542.2F
537.3H
3.2 %DG
10.4 %H2
0.0 %MO
0.0 %HU
0.1 %RA
0.2 %UC
0.0 %CO
0.0 %MR
85.9 %EF
3469F
ADIABATIC
FLAME
78194W
1840965W
551
256F
256F
265F
1726780W
20.0 % EX AIR
608F
1644601W
606F
57F
1758785W
104F
552
69.7H
FUEL
82180W
1323164W
475.2F
459.5H
FUEL
73.6 %C
24.1 %H
1.7 %O
0.5 %N
0.0 %S
0.0 %A
0.0 %M
23051 HV
LEAKAGES
LKG FLOW ENTH
1 3932 1460.4
2 898 1460.4
3 17003 1430.5
4 9841 1313.2
5 4296 1313.2
6 3179 1520.2
7 0 0.0
8 2440 1338.7
9 1400 1338.7
10 0 1460.4
11 1956 1398.7
93.8P
1328.0H
90.0%EFF
1266.9H
51.0F
21.82P
1207.0H
12.94P
1173.6H
3.20P
1095.0H
81.78%EFF
TO BASE ELEP
1025.4H
ELEP AT 1.50 IN HG
202067KW
85.0 PF
45.0 H2
870 FL
1868 GL
H4
H5
21.18P
H6
12.55P
H7
3.1 0P
230
11
9
910
209
552
922253W
1039.4H
5.91 %M
1.45 IN HG
85.3F
98900
GPM
67.0F
85%QL
90.5F
58.5H
208
1222008W
90.9F
59.6H
141021W
521.6P
221
FEEDPUMP
TURBINE
4324KW
222
H2
H3
0W 179.3P
82.1P
32336W
51.0P
1164.1H
230
160353W
525.4P
629.5F
1315.1H
H1
85952W
171.3P
449.8F
1244.4H
H2
42734W
77.1P
328.9F
1193.1H
H3
68753W
47.02P
349.8F
1210.9H
H4
34814W
20.15P
332.5F
1207.0H
H5
55473W
10.55P
288.9F
1177.7H
H6
45540W
5.10P
142.8F
1096.0H
H7
75.0W
503
6
1 3TD
21DC
475.2F
459.5H
389.1F
383.3H
1 TD
12DC
367.8F
344.1H
325.8F
296.4H
C49
206
309.8F
279.5H
551
D03
314.0F
288.8H
31548W
206
208
20007W
2019P
209
13005W
89.9PCT RPM
6TD
16DC
271.7F
241.0H
239.3F
207.8H
5TD
15DC
223.3F
192.0H
206.5F
174.6H
4TD
10DC
192.0F
160.5H
148.8F
116.8H
4TD
12DC
138.6F
107.0H
106.3F
74.3H
GSC
94.5F
63.0H
179.1H
509
AE
92.1F
60.7H
130.5H
504
FLOW FROM BOILER
PS1
6000W 1065.5H
WASTE
509
504
PS1
LEGEND
W - LB/HR
P - PSIA
F - DEG F
H - BTU/LB
MAKEUP
67F
35H
910
12578W
STM SEAL REG
5
2
10
11
8
9
GROSS GEN: 202067KW
AUX POWER: 6299KW
NET OUTPUT: 195768KW
UNIT HEAT RATE = 1897.9 / 195768 = 9695
COND DUTY = 9093 MMBTU
BOILER DUTY: 1631.2 MMBTU
BOILER EFFY: 86.9 %
BOILER INPUT: 1897.9 MMBTU
GTHR = 7904
NTHR = 8078
DOMINION VIRGINIA POWER
POSSUM POINT UNIT 4
HEAT BALANCE DIAGRAM
3WO @ 2400 PSIG
EVAPS OUT OF SERVICE
GAS FIRING 20% EXCESS AIR
October 12, 2006 12:14:31 PM Version 4.0.183
FCYCLE (C) POWER SOFTWARE ASSOCIATES INC PARIS, MAINE
WWW.POWERSOFTWAREINC.COM 207-744-0251
LICENSED TO DOMINION ENERGY


FEEDPUMP TURBINE 3436 KW
DOMINION VIRGINIA POWER
POSSUM POINT UNIT 4
HEAT BALANCE DIAGRAM
2VWO @ 2400 PSIG
EVAPS OUT OF SERVICE
GAS FIRING 20% EXCESS AIR
FLOW FROM BOILER
WASTE
LEGEND
W - LB/HR
P - PSIA
F - DEG F
H - BTU/LB
MAKEUP
STM SEAL REG
GROSS GEN: 160211 KW
AUX POWER: 5381 KW
NET OUTPUT: 154831 KW
BOILER DUTY: 1299.4 MMBTU
BOILER EFFY: 86.3 %
BOILER INPUT: 1504.3 MMBTU
UNIT HEAT RATE = 1504.3 / 154831 = 9716
COND DUTY = 721.7 MMBTU
GTHR = 7941
NTHR = 8111
October 12, 2006 12:14:39 PM Version 4.0.133
FCYCLE (C) POWER SOFTWARE ASSOCIATES INC PARIS, MAINE
WWW.POWERSOFTWAREINC.COM 207-744-0251
LICENSED TO DOMINION ENERGY



FLOW FROM BOILER		WASTE	LEGEND
P31	6000W 1065.5H	509 504 P31	W - LB/HR P - PSIA F - DEG F H - BTU/LB

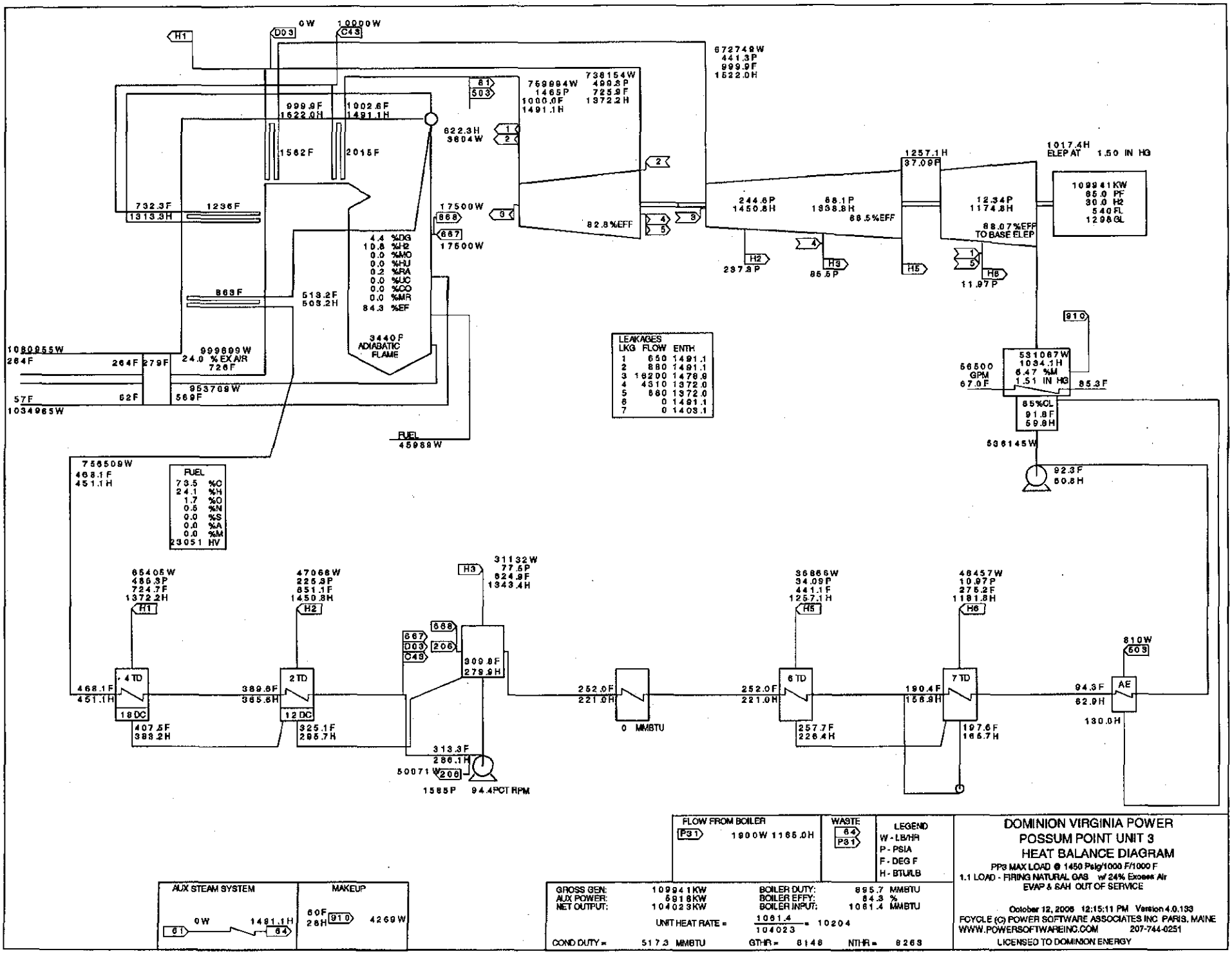
MAKEUP	STM SEAL REG
67F 35H 910 10711W	5 2 10 11 8 9

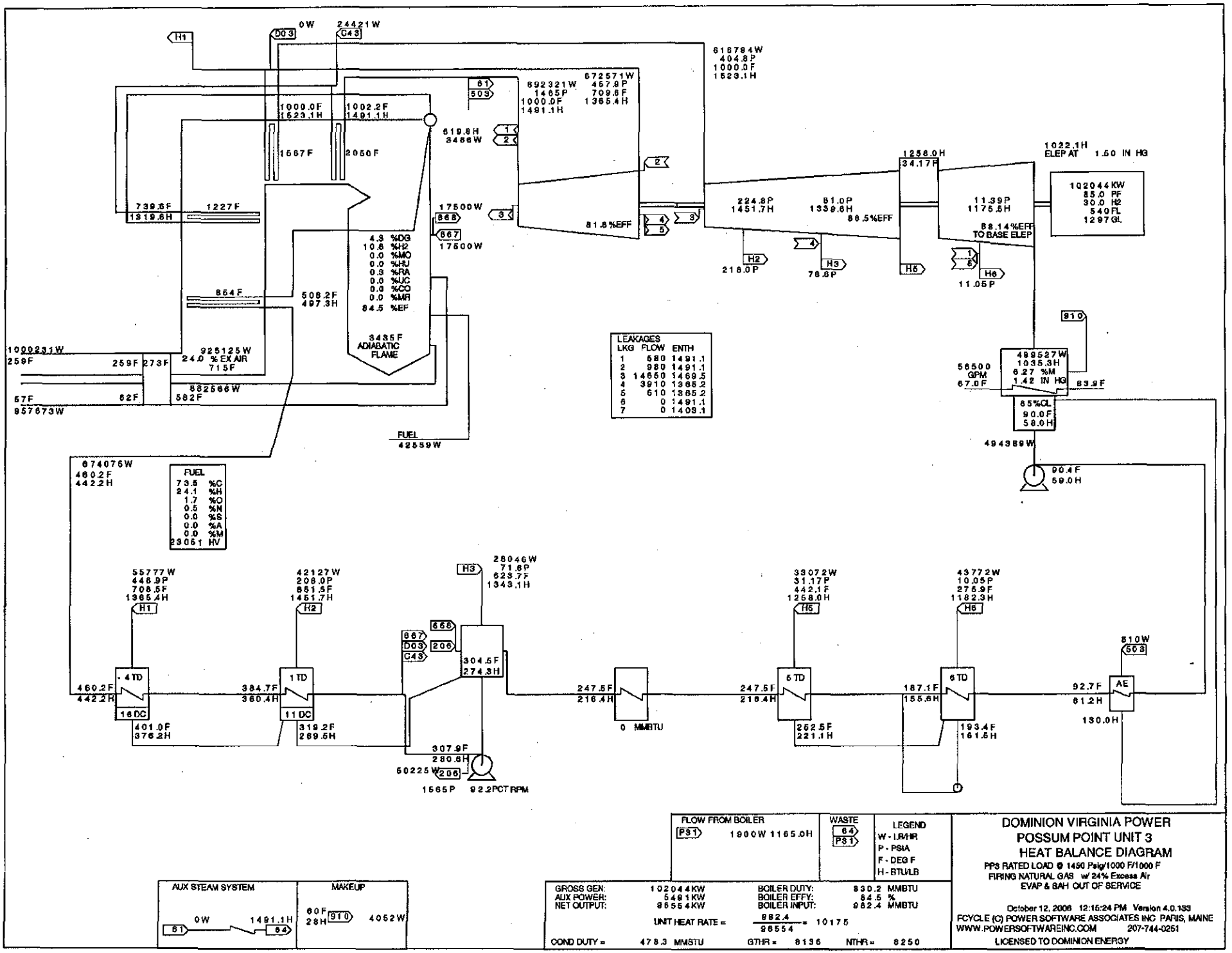
GROSS GEN:	91115KW	BOILER DUTY:	781.5 MMBTU
AUX POWER:	4601KW	BOILER EFFY:	87.2 %
NET OUTPUT:	86514KW	BOILER INPUT:	896.0 MMBTU
	UNIT HEAT RATE =	896.0 / 86514 =	10357
COND DUTY =	444.0 MMBTU	GTHR = 8336	NTHR = 8577

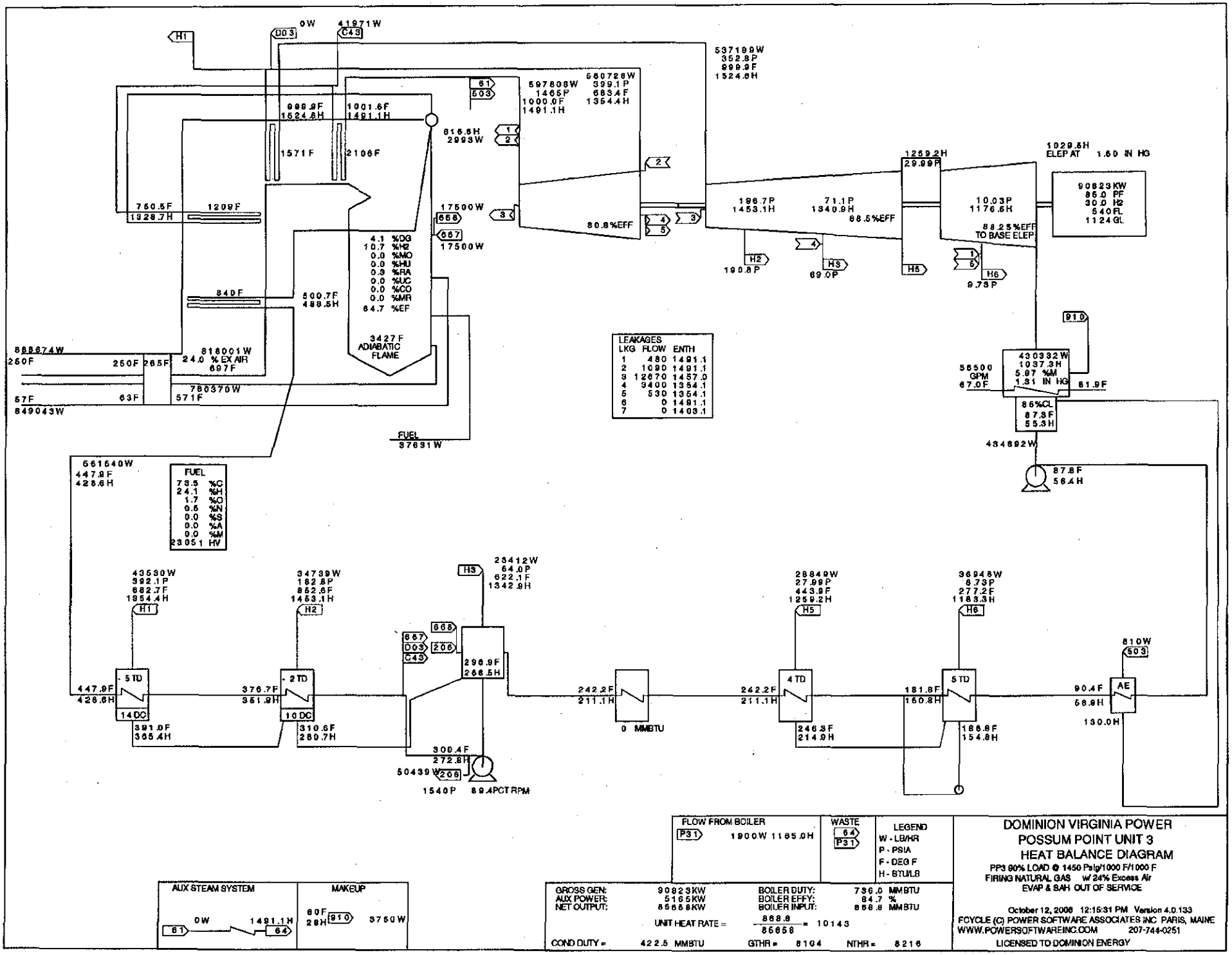
DOMINION VIRGINIA POWER
POSSUM POINT UNIT 4
HEAT BALANCE DIAGRAM

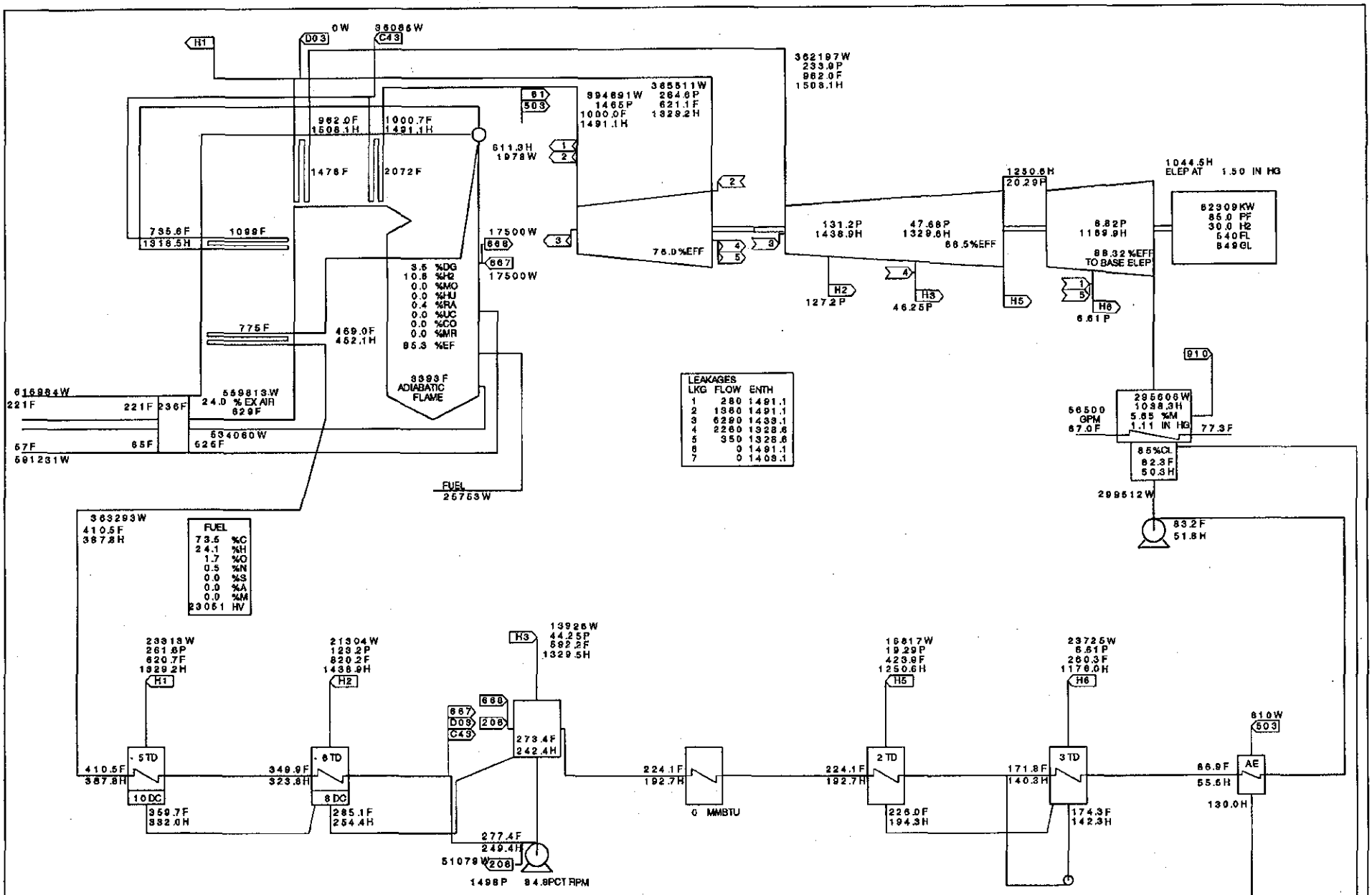
1VWO @ 2400 PSIG
EVAPS OUT OF SERVICE
GAS FIRING 20% EXCESS AIR

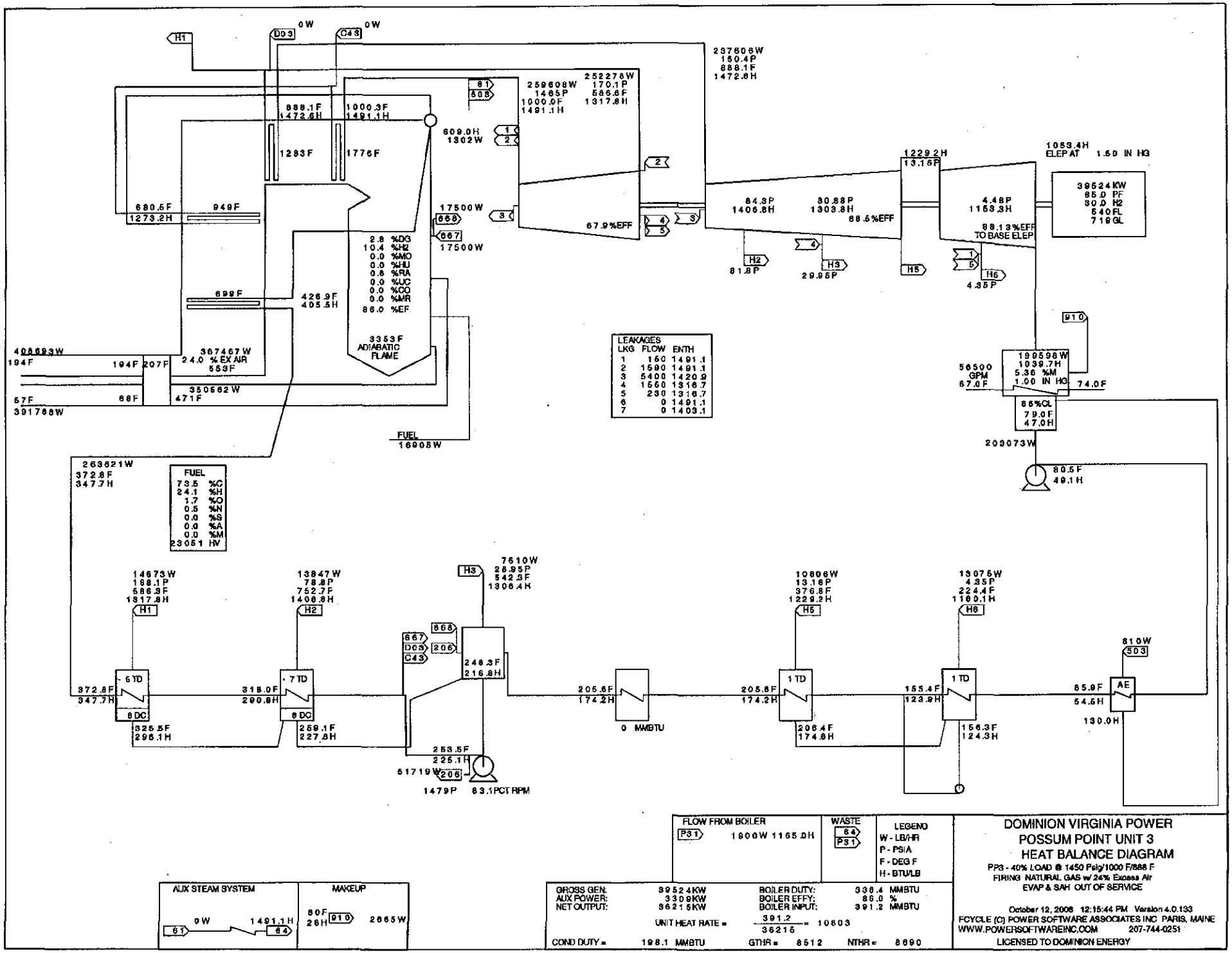
October 12, 2006 12:14:50 PM Version 4.0.133


0W 10000W
H1
D03
C43
672749W
441.3P
999.9F
1522.0H
759994W
1465P
1000.0F
1491.1H
738154W
499.3P
725.9F
1372.2H
B1
503
999.9F
1622.0H
1002.6F
1491.1H
622.3H
3604W
1562F
2015F
732.3F
1313.3H
1236F
17500W
868
867
17500W
82.8%EFF
244.6P
1450.8H
88.1P
1338.8H
88.5%EFF
1257.1H
97.09P
1017.4H
ELEP AT 1.50 IN HG
12.34P
1174.8H
88.07%EFF
TO BASE ELEP
109941KW
85.0 PF
30.0 H2
540 FL
1298 GL
237.8P
85.5P
11.97P
4.4 %DG
10.8 %H2
0.0 %MO
0.0 %HU
0.2 %RA
0.0 %UC
0.0 %CO
0.0 %MR
84.3 %EF
3440F
ADIABATIC
FLAME
863F
513.2F
508.2H
10809.55W
264F
264F
279F
999699W
24.0 % EX AIR
726F
953709W
569F
57F
1034965W
62F
FUEL
45988W
LEAKAGES
LKG FLOW ENTH
1 650 1491.1
2 880 1491.1
3 19200 1478.9
4 4310 1372.0
5 880 1372.0
6 0 1491.1
7 0 1403.1
910
531067W
1034.1H
6.47 %M
1.51 IN HG
56500
GPM
67.0F
85.3F
85%CL
91.8F
59.8H
536145W
92.3F
50.8H
756509W
468.1F
451.1H
FUEL
73.5 %C
24.1 %H
1.7 %O
0.5 %N
0.0 %S
0.0 %A
0.0 %M
23051 HV
65405W
486.3P
724.7F
1372.2H
47066W
225.3P
851.1F
1450.8H
H3
31132W
77.6P
824.9F
1343.4H
36866W
34.09P
441.1F
1257.1H
48457W
10.97P
275.2F
1181.8H
810W
503
H1
H2
H5
H6
868
867
003
C49
206
4 TD
2 TD
6 TD
7 TD
AE
18 DC
12 DC
468.1F
451.1H
389.6F
365.8H
309.8F
279.9H
252.0F
221.0H
190.4F
156.9H
94.3F
82.9H
130.0H
0 MMBTU
407.5F
383.2H
325.1F
295.7H
257.7F
226.4H
197.6F
166.7H
313.3F
286.1H
50071W
206
1585P 94.4PCT RPM
AUX STEAM SYSTEM
0W 1491.1H
61
64
MAKEUP
60F
28H
910
4269W
FLOW FROM BOILER
P31 1900W 1165.0H
WASTE
64
P31
LEGEND
W - LB/HR
P - PSIA
F - DEG F
H - BTU/LB
GROSS GEN: 109941KW
AUX POWER: 5918KW
NET OUTPUT: 104023KW
UNIT HEAT RATE = 1061.4 / 104023 = 10204
BOILER DUTY: 895.7 MMBTU
BOILER EFFY: 84.3 %
BOILER INPUT: 1061.4 MMBTU
COND DUTY = 517.3 MMBTU
GTHR = 8148
NTHR = 8263
DOMINION VIRGINIA POWER
POSSUM POINT UNIT 3
HEAT BALANCE DIAGRAM
PP3 MAX LOAD @ 1450 Psig/1000 F/1000 F
1.1 LOAD - FIRING NATURAL GAS w/ 24% Excess Air
EVAP & SAH OUT OF SERVICE
October 12, 2006 12:15:11 PM Version 4.0.133
PCYCLE (C) POWER SOFTWARE ASSOCIATES INC PARIS, MAINE
WWW.POWERSOFTWAREINC.COM 207-744-0251
LICENSED TO DOMINION ENERGY


0W 24421W
H1
D03
C43
616794W
404.8P
1000.0F
1523.1H
61
509
692321W 672571W
1465P 457.9P
1000.0F 709.6F
1491.1H 1365.4H
1000.0F 1002.2F
1523.1H 1491.1H
619.8H
3486W
1
2
1567F 2050F
739.6F 1227F
1319.6H
17500W
868
867
17500W
3
81.8%EFF
2
4
5
3
224.8P
1451.7H
81.0P
1339.6H
86.5%EFF
1256.0H
34.17P
H2
218.0P
4
H3
78.6P
H5
1
6
H6
11.05P
11.39P
1175.5H
88.14%EFF
TO BASE ELEP
1022.1H
ELEP AT 1.50 IN HG
102044 KW
85.0 PF
30.0 H2
540 FL
1297 GL
4.3 %DG
10.8 %H2
0.0 %MO
0.0 %HU
0.3 %RA
0.0 %UC
0.0 %CO
0.0 %MI
84.5 %EF
3435F
ADIABATIC
FLAME
854F
508.2F
497.3H
1000231W
259F
259F 273F
925125W
24.0 % EX AIR
715F
882566W
582F
57F
582F
957673W
FUEL
42559W
LEAKAGES
LKG FLOW ENTH
1 580 1491.1
2 980 1491.1
3 14650 1469.5
4 3910 1365.2
5 610 1365.2
6 0 1491.1
7 0 1409.1
910
489527W
1035.3H
6.27 %M
1.42 IN HG
56500
GPM
67.0F
89.9F
85%CL
90.0F
58.0H
494389W
90.4F
59.0H
674076W
460.2F
442.2H
FUEL
73.5 %C
24.1 %H
1.7 %O
0.5 %N
0.0 %S
0.0 %A
0.0 %M
23051 HV
55777W
448.9P
708.5F
1365.4H
H1
42127W
208.0P
851.5F
1451.7H
H2
28046W
71.6P
623.7F
1343.1H
H3
668
867
D03
C43
206
304.5F
274.3H
3307.2W
31.17P
442.1F
1258.0H
H5
43772W
10.05P
275.9F
1182.3H
H6
810W
503
460.2F
442.2H
4 TD
16 DC
401.0F
376.2H
384.7F
360.4H
1 TD
11 DC
319.2F
269.5H
247.5F
216.4H
0 MMBTU
247.5F
216.4H
5 TD
252.5F
221.1H
187.1F
155.6H
6 TD
193.4F
161.5H
92.7F
81.2H
AE
130.0H
307.9F
280.6H
50225W
206
1565P 92.2PCT RPM
AUX STEAM SYSTEM
0W 1491.1H
61
64
MAKEUP
60F
28H
910
4052W
FLOW FROM BOILER
P31
1900W 1165.0H
WASTE
64
P31
LEGEND
W - LB/HR
P - PSIA
F - DEG F
H - BTU/LB
GROSS GEN: 102044 KW
AUX POWER: 5491 KW
NET OUTPUT: 96554 KW
BOILER DUTY: 830.2 MMBTU
BOILER EFFY: 84.5 %
BOILER INPUT: 982.4 MMBTU
UNIT HEAT RATE = 982.4 / 96554 = 10175
COND DUTY = 478.3 MMBTU
GTHR = 8136
NTHR = 8250
DOMINION VIRGINIA POWER
POSSUM POINT UNIT 3
HEAT BALANCE DIAGRAM
PP3 RATED LOAD @ 1450 Psig/1000 F/1000 F
FIRING NATURAL GAS w/ 24% Excess Air
EVAP & SAH OUT OF SERVICE
October 12, 2006 12:15:24 PM Version 4.0.133
FCYCLE (C) POWER SOFTWARE ASSOCIATES INC PARIS, MAINE
WWW.POWERSOFTWAREINC.COM 207-744-0251
LICENSED TO DOMINION ENERGY


H1
D03
C43
0W
41971W
537199W
352.8P
899.9F
1524.6H
61
503
597808W
1465P
1000.0F
1491.1H
560726W
399.1P
683.4F
1354.4H
899.9F
1524.6H
1001.6F
1491.1H
816.5H
2993W
1
2
1571F
2106F
2
1259.2H
29.99P
1029.5H
ELEP AT 1.60 IN HG
90823 KW
85.0 PF
30.0 H2
540 FL
1124 GL
750.5F
1928.7H
1209F
17500W
666
3
667
17500W
80.8%EFF
4
5
3
196.7P
1453.1H
71.1P
1340.9H
88.5%EFF
10.03P
1176.6H
88.25%EFF
TO BASE ELEP
H2
190.8P
4
H3
69.0P
H5
1
5
H6
9.73P
4.1 %DG
10.7 %H2
0.0 %MO
0.0 %HU
0.9 %RA
0.0 %UC
0.0 %CO
0.0 %MR
64.7 %EF
3427 F
ADIABATIC
FLAME
840F
500.7F
489.5H
888674W
250F
250F
265F
818001W
24.0 % EX AIR
697F
780370W
571F
57F
63F
849043W
FUEL
37631W
LEAKAGES
LKG FLOW ENTH
1 480 1491.1
2 1090 1491.1
3 12670 1457.0
4 9400 1354.1
5 530 1354.1
6 0 1491.1
7 0 1403.1
910
430332W
1037.3H
5.97 %M
1.31 IN HG
55500
GPM
67.0F
61.9F
85%CL
87.8F
55.3H
434892W
87.8F
56.4H
561540W
447.9F
428.6H
FUEL
75.5 %C
24.1 %H
1.7 %O
0.6 %N
0.0 %S
0.0 %A
0.0 %M
23051 HV
43530W
392.1P
682.7F
1954.4H
H1
34739W
182.8P
852.6F
1453.1H
H2
28412W
64.0P
622.1F
1342.9H
H3
668
667
D03
C43
206
296.9F
266.5H
28849W
27.99P
443.9F
1259.2H
H5
36948W
8.73P
277.2F
1183.3H
H6
810W
503
5 TD
447.9F
428.6H
14 DC
391.0F
365.4H
2 TD
376.7F
351.9H
10 DC
310.6F
280.7H
242.2F
211.1H
0 MMBTU
4 TD
242.2F
211.1H
246.8F
214.9H
5 TD
181.8F
150.8H
186.8F
154.8H
90.4F
58.9H
AE
130.0H
300.4F
272.8H
50439W
206
1540P 89.4PCT RPM
AUX STEAM SYSTEM
0W
1491.1H
61
64
MAKEUP
60F
28H
910
3750W
FLOW FROM BOILER
P31
1900W 1185.0H
WASTE
64
P31
LEGEND
W - LB/HR
P - PSIA
F - DEG F
H - BTU/LB
GROSS GEN: 90823KW
AUX POWER: 5165KW
NET OUTPUT: 85658KW
BOILER DUTY: 736.0 MMBTU
BOILER EFFY: 84.7 %
BOILER INPUT: 868.8 MMBTU
UNIT HEAT RATE = 868.8 / 85658 x 10143
COND DUTY = 422.5 MMBTU
GTHR = 8104
NTHR = 8216
DOMINION VIRGINIA POWER
POSSUM POINT UNIT 3
HEAT BALANCE DIAGRAM
PP3 90% LOAD @ 1450 Psig/1000 F/1000 F
FIRING NATURAL GAS w/ 24% Excess Air
EVAP & SAH OUT OF SERVICE
October 12, 2006 12:15:31 PM Version 4.0.133
©CYCLE (C) POWER SOFTWARE ASSOCIATES INC PARIS, MAINE
WWW.POWERSOFTWAREINC.COM 207-744-0251
LICENSED TO DOMINION ENERGY


H1
D03
0W
86086W
C43
362197W
233.9P
962.0F
1508.1H
61
503
894691W
1465P
1000.0F
1491.1H
385511W
264.6P
621.1F
1329.2H
962.0F
1508.1H
1000.7F
1491.1H
611.3H
1978W
1
2
1476F
2072F
2
735.6F
1316.5H
1099F
17500W
668
3
667
17500W
76.0%EFF
4
5
3
3.5 %DG
10.8 %H2
0.0 %MO
0.0 %HU
0.4 %RA
0.0 %UC
0.0 %CO
0.0 %MR
85.3 %EF
3393F
ADIABATIC
FLAME
775F
469.0F
452.1H
616984W
221F
221F
236F
559813W
24.0 % EX AIR
629F
534060W
626F
57F
591231W
65F
FUEL
25753W
131.2P
1438.9H
47.68P
1329.6H
86.5%EFF
1250.6H
20.29P
1044.5H
ELEP AT 1.50 IN HG
82309KW
85.0 PF
30.0 H2
540FL
849GL
8.82P
1159.9H
88.32%EFF
TO BASE ELEP
H2
127.2P
4
H3
46.25P
H5
1
5
H6
6.61P
910
LEAKAGES
LKG FLOW ENTH
1 280 1491.1
2 1360 1491.1
3 6290 1438.1
4 2260 1328.6
5 350 1328.6
6 0 1491.1
7 0 1408.1
295606W
1098.3H
5.65 %M
1.11 IN HG
56500
GPM
87.0F
77.3F
85%CL
82.3F
50.3H
299512W
83.2F
51.8H
363293W
410.5F
387.8H
FUEL
73.5 %C
24.1 %H
1.7 %O
0.5 %N
0.0 %S
0.0 %A
0.0 %M
23061 HV
23313W
261.6P
620.7F
1329.2H
H1
21304W
123.2P
820.2F
1438.9H
H2
13926W
44.25P
592.2F
1329.5H
H3
667
668
D09
C43
208
16817W
19.29P
423.9F
1250.6H
H5
23725W
6.51P
260.3F
1176.0H
H6
610W
503
1 TD
410.5F
387.8H
10 DC
359.7F
332.0H
2 TD
349.9F
323.8H
8 DC
285.1F
254.4H
3 TD
273.4F
242.4H
277.4F
249.4H
51078W
208
1498P 84.8PCT RPM
224.1F
192.7H
0 MMBTU
224.1F
192.7H
2 TD
226.0F
194.3H
171.8F
140.3H
3 TD
174.3F
142.3H
86.9F
55.5H
AE
130.0H
AUX STEAM SYSTEM
0W
1491.1H
61
64
MAKEUP
60F
28H
910
3086W
FLOW FROM BOILER
P31
1900W 1165.0H
WASTE
64
P31
LEGEND
W - LB/HR
P - PSIA
F - DEG F
H - BTU/LB
GROSS GEN: 82309 KW
AUX POWER: 4547 KW
NET OUTPUT: 57762 KW
BOILER DUTY: 508.1 MMBTU
BOILER EFFY: 85.3 %
BOILER INPUT: 595.1 MMBTU
UNIT HEAT RATE = 595.1 / 57762 = 10303
COND DUTY = 292.0 MMBTU
GTHR = 8155
NTHR = 8262
DOMINION VIRGINIA POWER
POSSUM POINT UNIT 3
HEAT BALANCE DIAGRAM
PP3 - 50% LOAD @ 1450 Psig/1000 F/921 F
FIRING NATURAL GAS w/ 24% Excess Air
EVAP & SAH OUT OF SERVICE
October 12, 2006 12:15:38 PM Version 4.0.193
FCYCLE (C) POWER SOFTWARE ASSOCIATES INC PARIS, MAINE
WWW.POWERSOFTWAREINC.COM 207-744-0251
LICENSED TO DOMINION ENERGY


H1
D03
0W
C43
0W
237606W
150.4P
888.1F
1472.6H
61
608
259608W
1465P
1000.0F
1491.1H
252278W
170.1P
586.6F
1317.8H
888.1F
1472.6H
1000.3F
1491.1H
609.0H
1302W
1
2
1283F
1776F
2
680.5F
1273.2H
949F
17500W
668
3
667
17500W
67.9%EFF
4
5
3
84.3P
1406.8H
30.88P
1303.8H
88.5%EFF
1229.2H
13.16P
1053.4H
ELEP AT 1.50 IN HG
4.48P
1153.3H
89.13%EFF
TO BASE ELEP
39524 KW
85.0 PF
30.0 H2
540 FL
719 GL
2.8 %DG
10.4 %H2
0.0 %MO
0.0 %HU
0.8 %RA
0.0 %UC
0.0 %CO
0.0 %MR
86.0 %EF
3353F
ADIABATIC
FLAME
699F
426.9F
405.5H
408693W
194F
194F
207F
367467W
24.0 % EX AIR
553F
350562W
471F
57F
391788W
68F
FUEL
16905W
H2
81.8P
H3
29.95P
4
H5
1
5
H6
4.35P
910
199598W
1039.7H
5.36 %M
1.00 IN HG
56500
GPM
67.0F
74.0F
85%GL
79.0F
47.0H
209073W
80.5F
49.1H
LEAKAGES
LKG FLOW ENTH
1 150 1491.1
2 1590 1491.1
3 5400 1420.9
4 1550 1316.7
5 230 1316.7
6 0 1491.1
7 0 1403.1
263621W
372.8F
347.7H
FUEL
73.5 %C
24.1 %H
1.7 %O
0.5 %N
0.0 %S
0.0 %A
0.0 %M
23051 HV
14673W
168.1P
586.3F
1317.8H
H1
13847W
78.8P
752.7F
1408.8H
H2
7610W
28.95P
542.3F
1306.4H
H3
10806W
13.16P
376.8F
1229.2H
H5
13075W
4.35P
224.4F
1160.1H
H6
810W
503
667
668
D03
206
C43
246.3F
216.8H
6 TD
372.8F
347.7H
6 DC
325.5F
296.1H
7 TD
318.0F
290.8H
6 DC
259.1F
227.8H
205.6F
174.2H
0 MMBTU
205.8F
174.2H
1 TD
206.4F
174.8H
155.4F
123.9H
1 TD
156.3F
124.3H
85.9F
54.6H
AE
130.0H
253.5F
225.1H
51719W
206
1479P 83.1PCT RPM
FLOW FROM BOILER
P31
1800W 1165.0H
WASTE
64
P31
LEGEND
W - LB/HR
P - PSIA
F - DEG F
H - BTU/LB
AUX STEAM SYSTEM
61
0W
1491.1H
64
MAKEUP
50F
26H
910
2665W
GROSS GEN: 39524KW
AUX POWER: 3309KW
NET OUTPUT: 36215KW
BOILER DUTY: 336.4 MMBTU
BOILER EFFY: 86.0 %
BOILER INPUT: 391.2 MMBTU
UNIT HEAT RATE = 391.2 / 36215 = 10803
COND DUTY = 198.1 MMBTU
GTHR = 8512
NTHR = 8690
DOMINION VIRGINIA POWER
POSSUM POINT UNIT 3
HEAT BALANCE DIAGRAM
PP3 - 40% LOAD @ 1450 Psig/1000 F/888 F
FIRING NATURAL GAS w/ 24% Excess Air
EVAP & SAH OUT OF SERVICE
October 12, 2006 12:15:44 PM Version 4.0.133
ECYCLE (C) POWER SOFTWARE ASSOCIATES INC PARIS, MAINE
WWW.POWERSOFTWAREINC.COM 207-744-0251
LICENSED TO DOMINION ENERGY

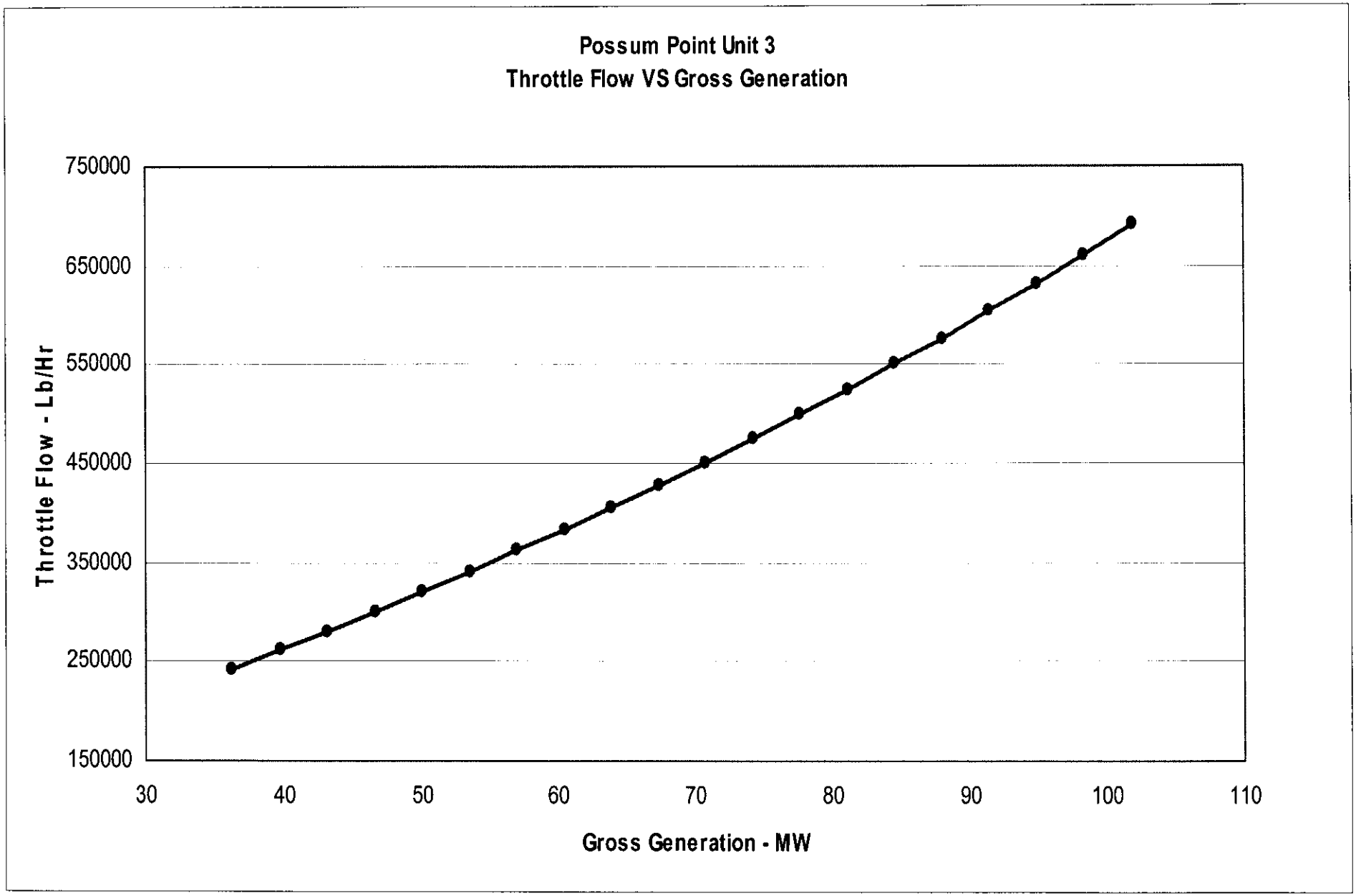
Method of Heat Rejection Curve Set for Possum Point Unit 3

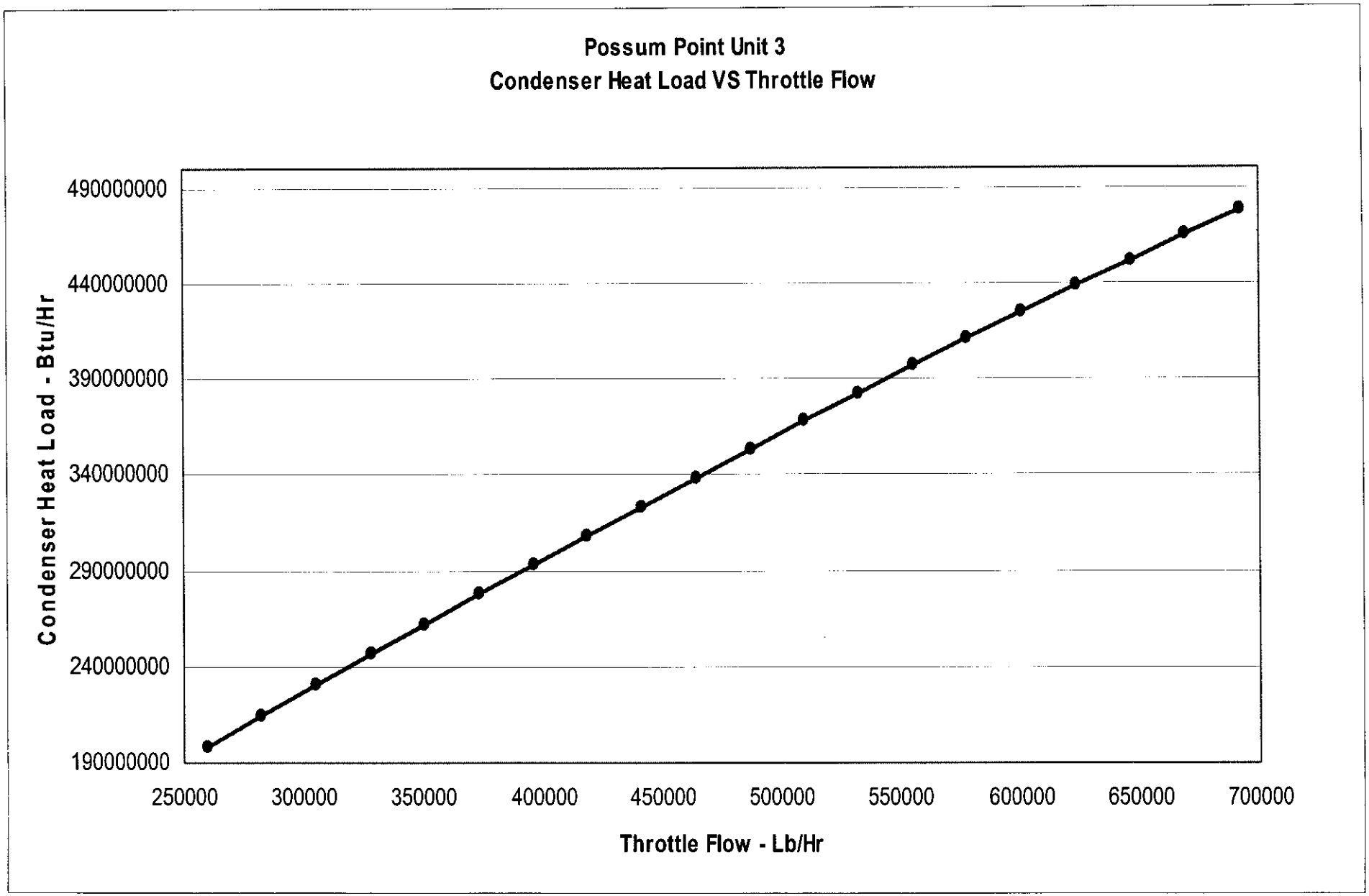
Curve number	Curve Title	No.of curves in set	a	b	c	d	e	PADS Curve No.
1	Throttle Flow (lb/hr) VS Gross Generation (MW)	1	4.901267E+04	5.317732E+03	-5.675925E+00	1.503575E-01	0.000000E+00	35
2	Condenser Heat Load (Btu/hr) VS Throttle Flow (lb/hr)	1	4.377404E+06	7.760127E+02	-1.030566E-04	-4.177198E-11	0.000000E+00	32
3	Condenser Design Back Pressure ("Hg) vs Heat Load (Btu/hr) @ CW Inlet Temperature (°I	4	-2.086215E+00	1.201237E-01	-1.902876E-03	1.109727E-05	0.000000E+00	20
		0	1.765352E-08	-9.704998E-10	1.583222E-11	-7.407402E-14	0.000000E+00	21
		0	-4.848594E-17	2.812760E-18	-4.701537E-20	2.303897E-22	0.000000E+00	22
		0	4.473114E-26	-2.573046E-27	4.371851E-29	-2.161762E-31	0.000000E+00	23
4	Heat Rate Deviation (%) VS Back Pressure ("Hg) @ Throttle Flow (lb/hr)	5	-1.955553E+01	3.606867E-05	1.795551E-11	-5.074928E-17	0.000000E+00	24
		0	1.473924E+01	-1.192147E-05	-7.753575E-11	9.785324E-17	0.000000E+00	25
		0	-1.530307E+00	-7.934686E-06	4.884230E-11	-4.922873E-17	0.000000E+00	26
		0	6.493934E-02	1.569517E-06	-6.845168E-12	6.419265E-18	0.000000E+00	27
		0	0.000000E+00	0.000000E+00	0.000000E+00	0.000000E+00	0.000000E+00	28

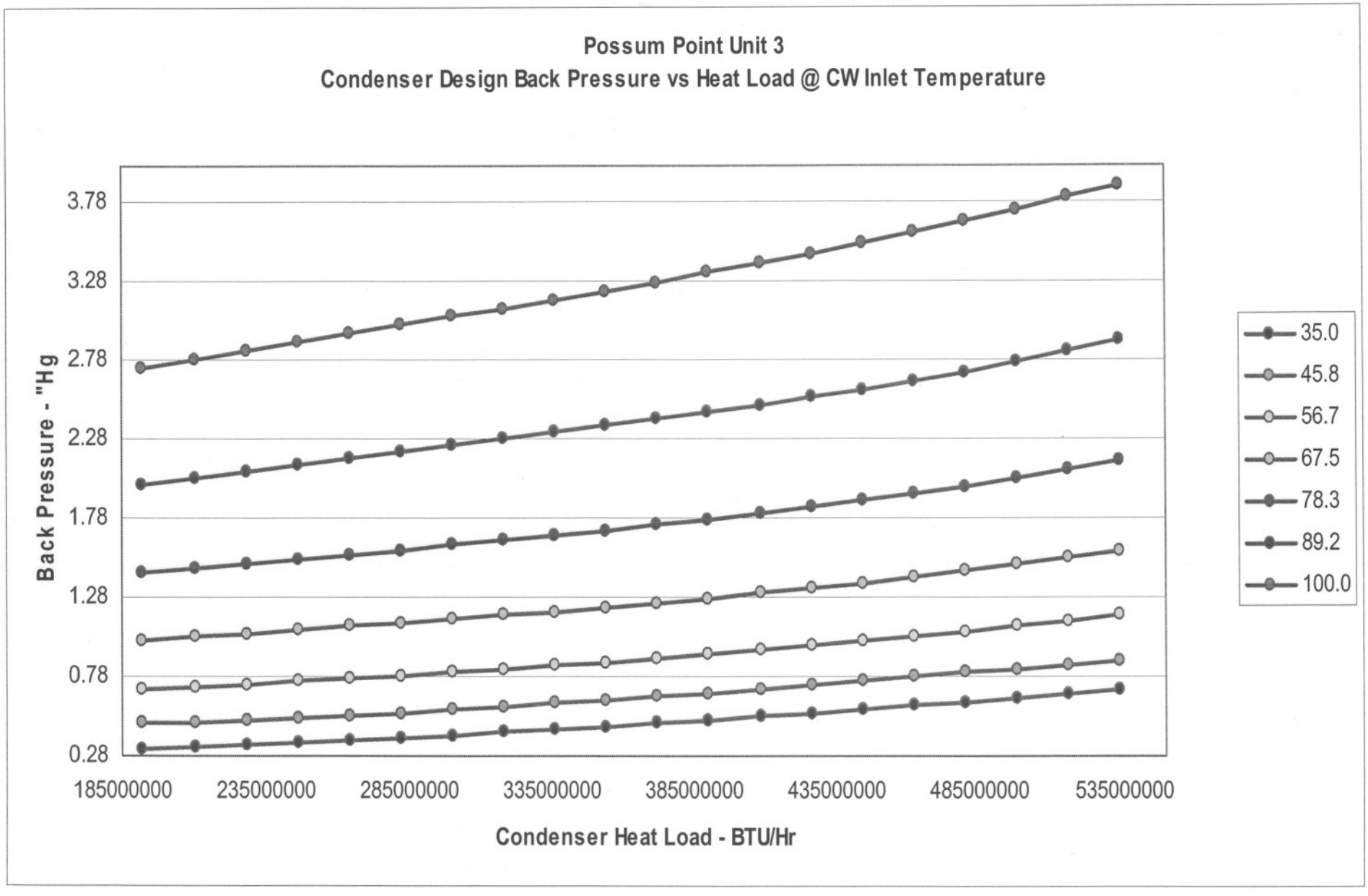
Step 1: Find the throttle flow at a given gross load from curve 1
Step 2: Find the condenser heat load at the throttle flow from curve 2
Step 3: Find the "design" condenser back pressure for the heat load for the throttle flow from curve set 3
Step 4: Find the deviation in heat rate for the "design" back pressure at the throttle flow from curve set 4
Step 5: Find the deviation in heat rate for the actual back pressure at the throttle flow from curve set 4
Step 6: Calculate load change: load change = load x Δchg / (100 - Δchg)
Step 7: Calculate heat rejection change: heat rejection change = load change x 3413 Btu/kW
Step 8: Calculate new load: new load = load + load change
Step 9: Calculate new heat rejection: new heat rejection = heat load + heat rejection change
repeat steps 1 through 9 to create data for new curve set: heat rejection for load at back pressure
Results:

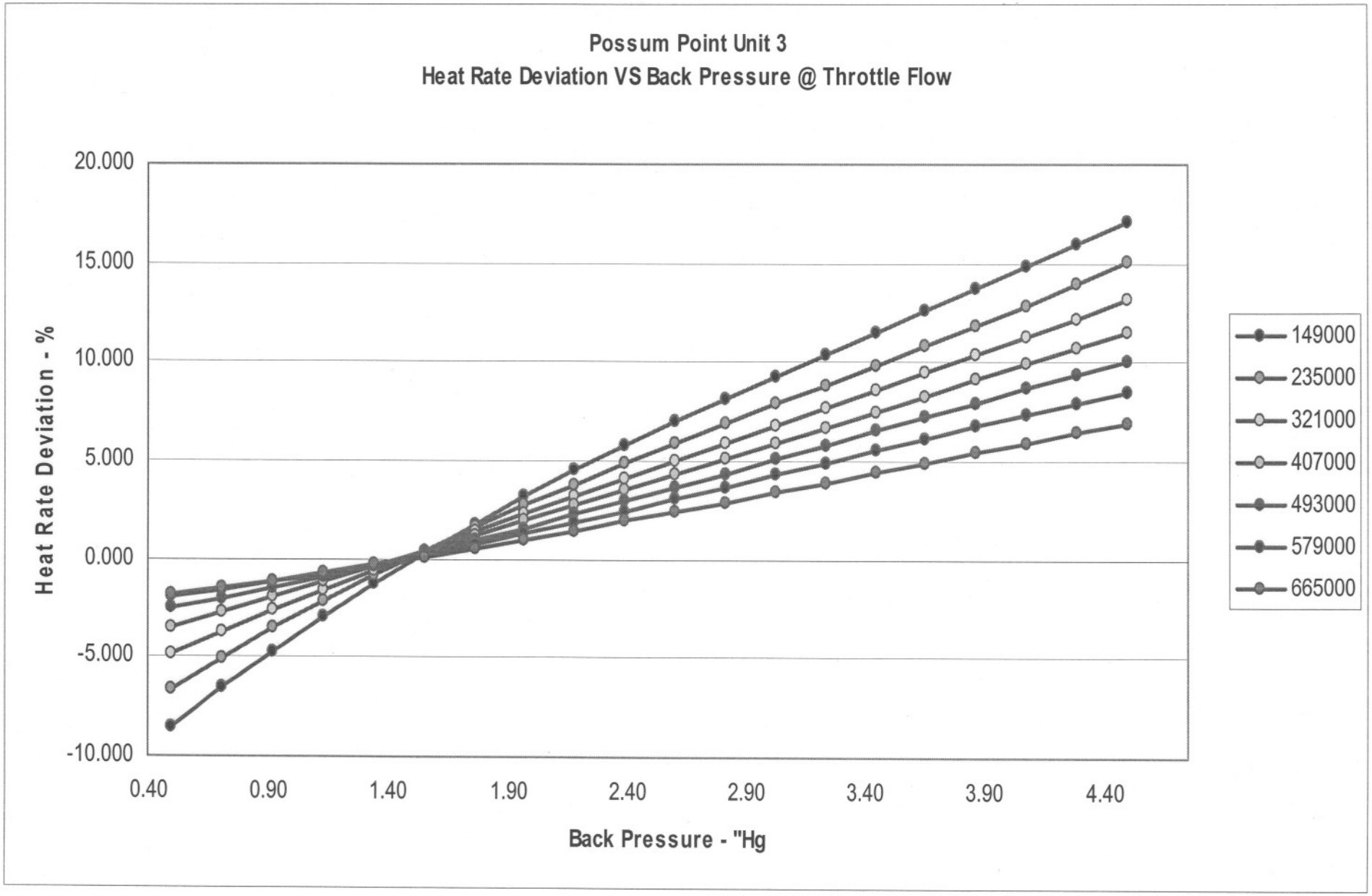
Condenser Heat Rejection VS Gross Load @ Condenser Back Pressure	4	6.638929E+01	-2.805046E+01	1.201008E+01	-1.471706E+00	0.000000E+00	NA
This curve set is used to find the Monthly maximum heat rejections at the monthly		1.154935E+00	3.532082E+00	-1.281995E+00	1.517150E-01	0.000000E+00	
maximum combination of load and back pressure.		5.076273E-02	-7.103495E-02	2.829532E-02	-3.348823E-03	0.000000E+00	
		-2.466938E-04	4.052887E-04	-1.690012E-04	2.005839E-05	0.000000E+00	

Note: 1) Heat load and heat rejection are synonomous terms
2) Aboves curves developed using Fcycle version 4.0.141 heat balances dated July 12, 2006 at normal operating throttle pressures

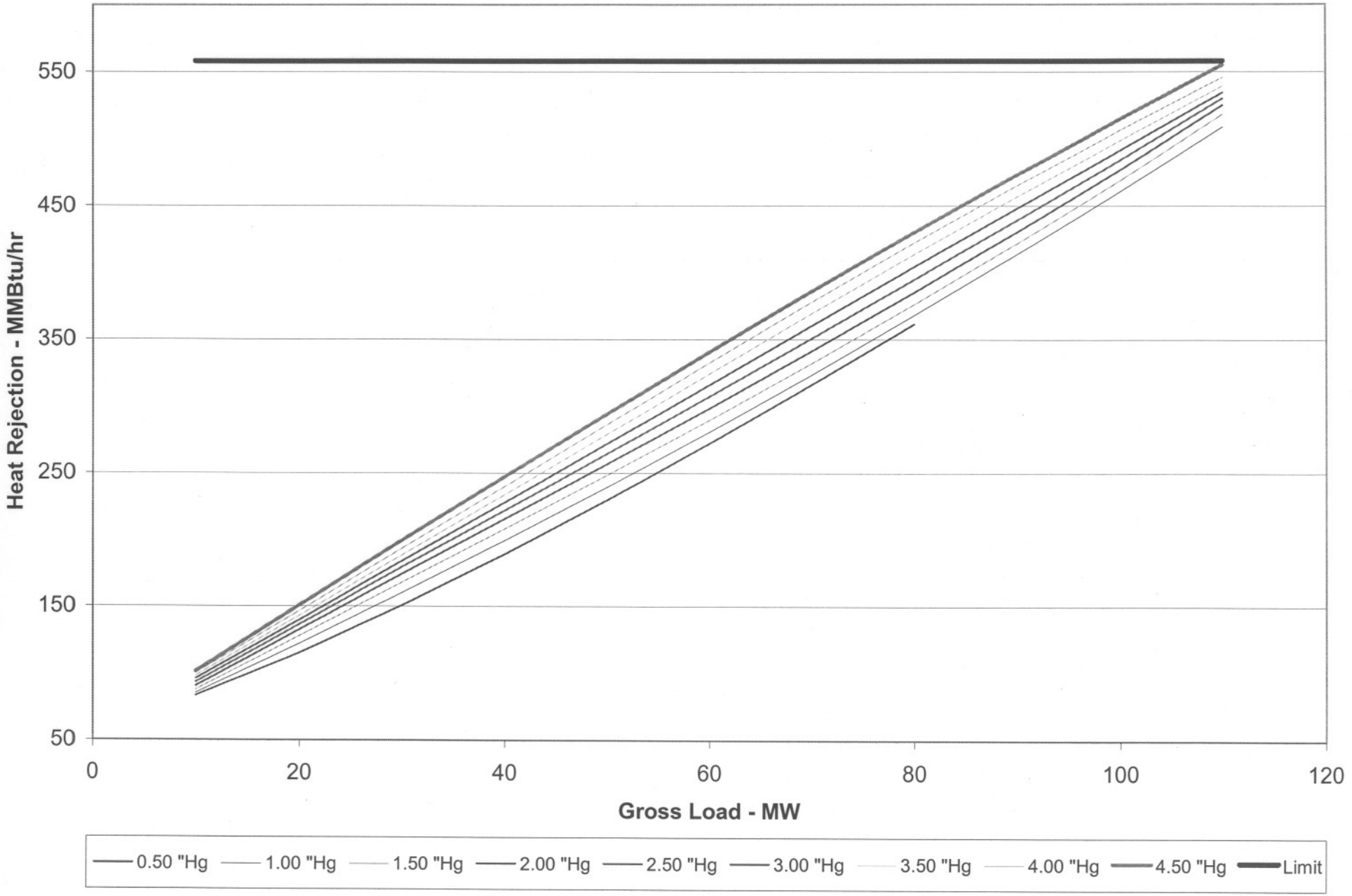

Possum Point Unit 3
Throttle Flow VS Gross Generation
Throttle Flow - Lb/Hr
750000
650000
550000
450000
350000
250000
150000
30
40
50
60
70
80
90
100
110
Gross Generation - MW


Possum Point Unit 3
Condenser Heat Load VS Throttle Flow
Condenser Heat Load - Btu/Hr
490000000
440000000
390000000
340000000
290000000
240000000
190000000
250000
300000
350000
400000
450000
500000
550000
600000
650000
700000
Throttle Flow - Lb/Hr


Possum Point Unit 3
Condenser Design Back Pressure vs Heat Load @ CW Inlet Temperature
Back Pressure - "Hg
3.78
3.28
2.78
2.28
1.78
1.28
0.78
0.28
185000000
235000000
285000000
335000000
385000000
435000000
485000000
535000000
Condenser Heat Load - BTU/Hr
35.0
45.8
56.7
67.5
78.3
89.2
100.0


Possum Point Unit 3
Heat Rate Deviation VS Back Pressure @ Throttle Flow
Heat Rate Deviation - %
20.000
15.000
10.000
5.000
0.000
-5.000
-10.000
0.40
0.90
1.40
1.90
2.40
2.90
3.40
3.90
4.40
Back Pressure - "Hg
149000
235000
321000
407000
493000
579000
665000

Possum Point Unit 3 Heat Rejection
Condenser Heat Rejection VS Load @ Various Condenser Back Pressures



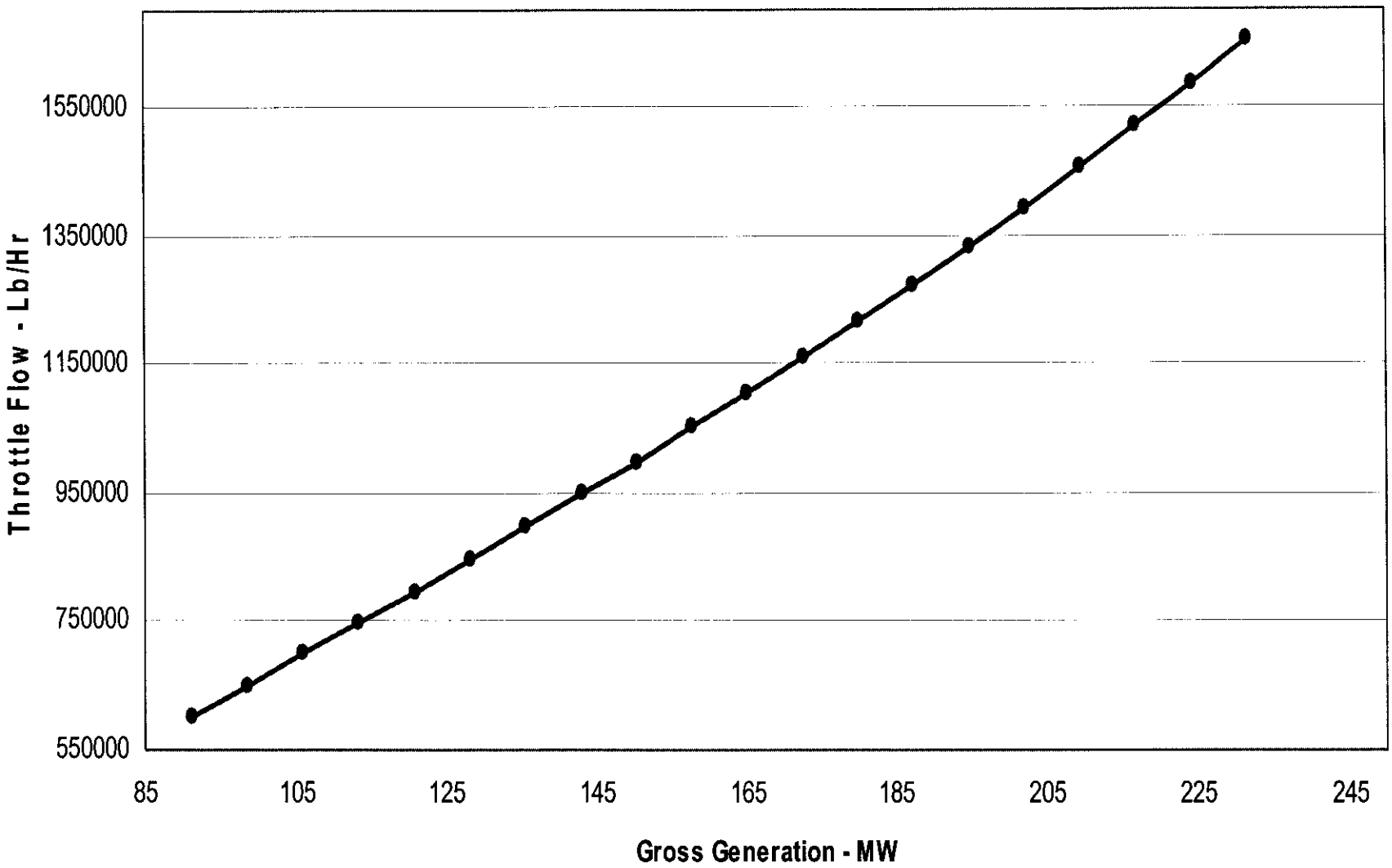
Method of Heat Rejection Curve Set for Possum Point Unit 4

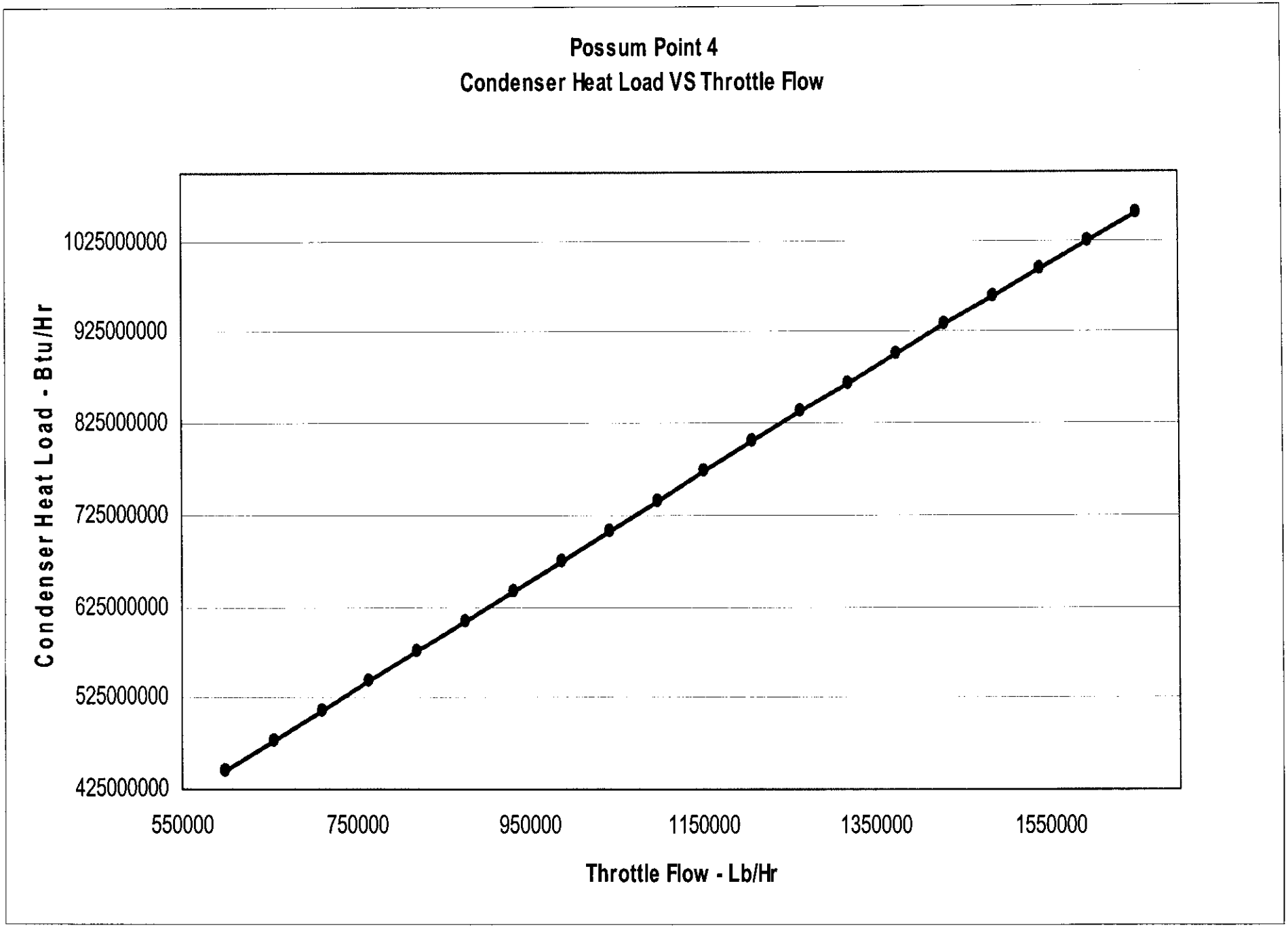
Curve number	Curve Title	No.of curves in set	a	b	c	d	e	PADS Curve No.
1	Throttle Flow (lb/hr) VS Gross Generation (MW)	1	-7.233284E+04	8.570278E+03	-1.846912E+01	5.870984E-02	0.000000E+00	35
2	Condenser Heat Load (Btu/hr) VS Throttle Flow (lb/hr)	1	1.076619E+08	5.239174E+02	8.001655E-05	-3.017602E-11	0.000000E+00	32
3	Condenser Design Back Pressure ("Hg) vs Heat Load (Btu/hr) @ CW Inlet Temperature (°I	4	-2.057017E+00	1.182739E-01	-1.949471E-03	1.198717E-05	0.000000E+00	20
		0	6.448232E-09	-3.611899E-10	6.336970E-12	-3.250166E-14	0.000000E+00	21
		0	-5.242032E-18	3.457168E-19	-6.618724E-21	3.742495E-23	0.000000E+00	22
		0	1.025408E-27	-8.276810E-29	1.890667E-30	-1.170393E-32	0.000000E+00	23
4	Heat Rate Deviation (%) VS Back Pressure ("Hg) @ Throttle Flow (lb/hr)	5	-4.040600E+01	8.331456E-05	-5.702999E-11	1.317060E-17	0.000000E+00	24
		0	3.449192E+01	-7.959183E-05	5.606163E-11	-1.289539E-17	0.000000E+00	25
		0	-6.477227E+00	2.090101E-05	-1.599053E-11	3.710299E-18	0.000000E+00	26
		0	6.123338E-01	-2.203915E-06	1.755084E-12	-4.111635E-19	0.000000E+00	27
		0	0.000000E+00	0.000000E+00	0.000000E+00	0.000000E+00	0.000000E+00	28
	Step 1: Find the throttle flow at a given gross load from curve 1							
	Step 2: Find the condenser heat load at the throttle flow from curve 2							
	Step 3: Find the "design" condenser back pressure for the heat load for the throttle flow from curve set 3							
	Step 4: Find the deviation in heat rate for the "design" back pressure at the throttle flow from curve set 4							
	Step 5: Find the deviation in heat rate for the actual back pressure at the throttle flow from curve set 4							
	Step 6: Calculate load change: load change = load x Δchg / (100 - Δchg)							
	Step 7: Calculate heat rejection change: heat rejection change = load change x 3413 Btu/kW							
	Step 8: Calculate new load: new load = load + load change							
	Step 9: Calculate new heat rejection: new heat rejection = heat load + heat rejection change							
	repeat steps 1 through 9 to create data for new curve set: heat rejection for load at back pressure							
	Results:							
	Condenser Heat Rejection VS Gross Load @ Condenser Back Pressure	4	5.682797E-01	1.004014E+02	-2.824759E+01	2.887438E+00	0.000000E+00	NA
	This curve set is used to find the Monthly maximum heat rejections at the monthly		4.830544E+00	-7.760592E-01	3.820938E-01	-4.431178E-02	0.000000E+00	
	maximum combination of load and back pressure.		-5.976094E-03	-3.843936E-04	6.685075E-05	-5.257212E-06	0.000000E+00	
			2.257987E-05	4.183386E-06	-3.242151E-06	4.487383E-07	0.000000E+00	

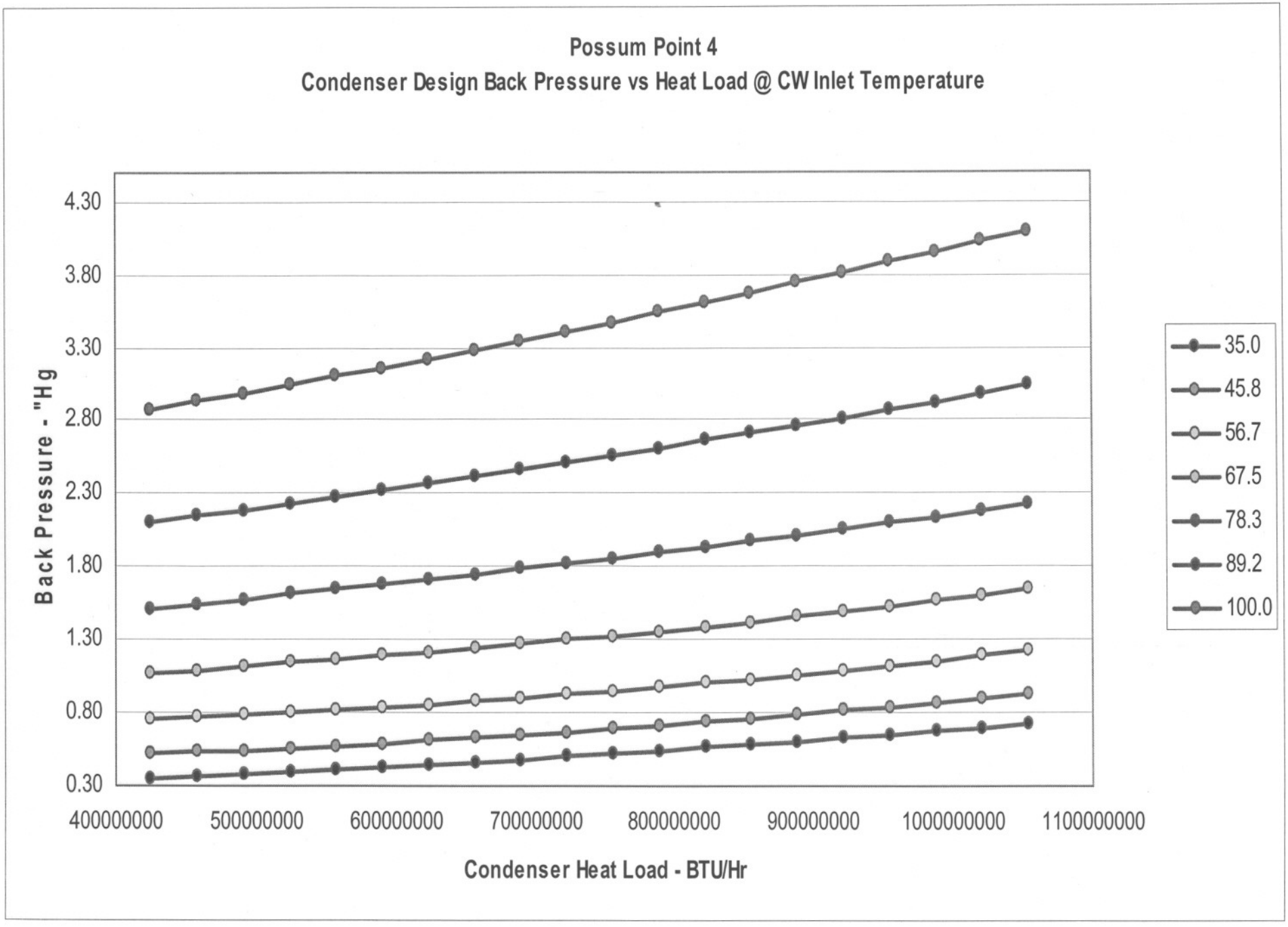
Note: 1) Heat load and heat rejection are synonomous terms

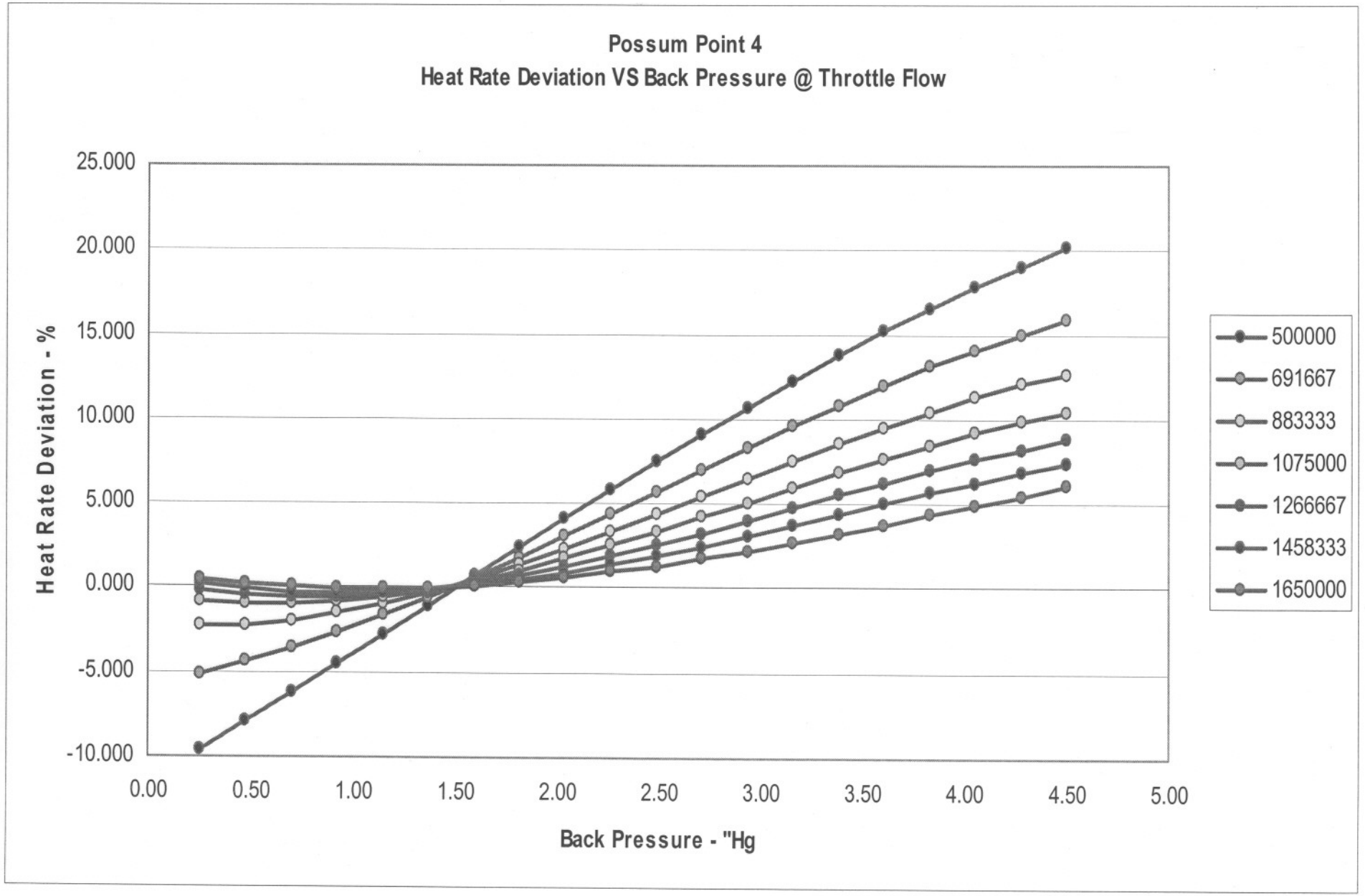
2) Aboves curves developed using Fcycle version 4.0.141 heat balances dated July 12, 2006 at normal operating throttle pressures

Possum Point 4
Throttle Flow VS Gross Generation



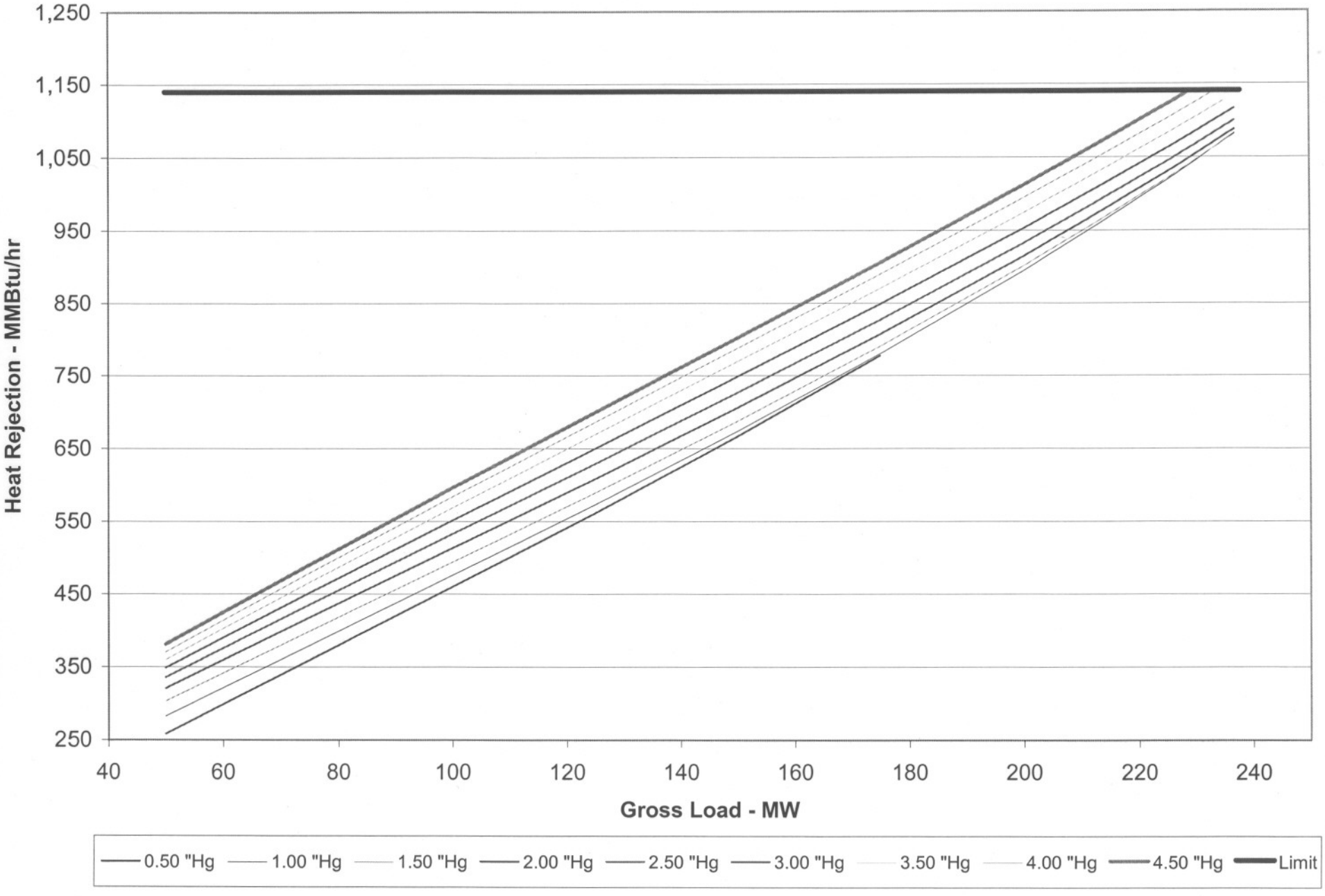

Possum Point 4
Condenser Heat Load VS Throttle Flow
Condenser Heat Load - Btu/Hr
1025000000
925000000
825000000
725000000
625000000
525000000
425000000
550000
750000
950000
1150000
1350000
1550000
Throttle Flow - Lb/Hr


Possum Point 4
Condenser Design Back Pressure vs Heat Load @ CW Inlet Temperature
Back Pressure - "Hg
4.30
3.80
3.30
2.80
2.30
1.80
1.30
0.80
0.30
400000000
500000000
600000000
700000000
800000000
900000000
1000000000
1100000000
Condenser Heat Load - BTU/Hr
35.0
45.8
56.7
67.5
78.3
89.2
100.0


Possum Point 4
Heat Rate Deviation VS Back Pressure @ Throttle Flow
Heat Rate Deviation - %
25.000
20.000
15.000
10.000
5.000
0.000
-5.000
-10.000
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
Back Pressure - "Hg
500000
691667
883333
1075000
1266667
1458333
1650000

Possum Point Unit 4 Heat Rejection

Condenser Heat Rejection VS Load @ Various Condenser Back Pressures



Facility = Possum Point - 001/002 and 003
Chemical = Chlorine
Chronic averaging period = 4
WLAa = 0.038
WLAc = 0.022
Q.L. = 0.1
# samples/mo. = 4
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = .15
Variance = .0081
C.V. = 0.6
97th percentile daily values = .365012
97th percentile 4 day average = .249568
97th percentile 30 day average= .180907
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 3.21766452491711E-02
Average Weekly limit = 3.21766452491711E-02
Average Monthly LImit = 0.022

The data are:

0.15

10/23/2006 9:29:07 AM

Facility = Possum Point
Chemical = Copper
Chronic averaging period = 4
WLAa = 16.4
WLAc = 11.4
Q.L. = 1.0
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 10
Variance = 36
C.V. = 0.6
97th percentile daily values = 24.3341
97th percentile 4 day average = 16.6379
97th percentile 30 day average= 12.0605
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 16.4
Average Weekly limit = 16.4
Average Monthly LImit = 16.4

The data are:

10

10/23/2006 9:40:26 AM

Facility = Possum Point - 004
Chemical = Copper
Chronic averaging period = 4
WLAa = 16.4
WLAc = 285
Q.L. = 1.0
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 3
Expected Value = 6.33333
Variance = 14.44
C.V. = 0.6
97th percentile daily values = 15.4116
97th percentile 4 day average = 10.5373
97th percentile 30 day average= 7.63833
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

7
7
5

Facility = Possum Point - Outfall 004
Chemical = Chlorine
Chronic averaging period = 4
WLAa = 0.038
WLAc = 0.55
Q.L. = 0.1
# samples/mo. = 4
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 10
Variance = 36
C.V. = 0.6
97th percentile daily values = 24.3341
97th percentile 4 day average = 16.6379
97th percentile 30 day average= 12.0605
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 0.038
Average Weekly limit = 0.038
Average Monthly LImit = 2.59815774306532E-02

The data are:

10

10/23/2006 9:57:19 AM

Facility = Possum Point -005
Chemical = Nickel
Chronic averaging period = 4
WLAa = 240
WLAc = 26
Q.L. = 5.0
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 3
Expected Value = 13.3333
Variance = 64
C.V. = 0.6
97th percentile daily values = 32.4455
97th percentile 4 day average = 22.1838
97th percentile 30 day average= 16.0807
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

10
16
14

10/23/2006 9:58:56 AM

Facility = Possum Point - 005
Chemical = Arsenic
Chronic averaging period = 4
WLAa = 340
WLAc = 150
Q.L. = 3.0
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 4
Expected Value = 12
Variance = 51.84
C.V. = 0.6
97th percentile daily values = 29.2010
97th percentile 4 day average = 19.9654
97th percentile 30 day average= 14.4726
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

10
16
14
8

ACUTE TEST DATA REVIEW CHECKLIST
Revised October 13, 2004

Referencing "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms", Fifth Edition, EPA 821-R-02-012, October 2002

Permit Number VA0002071 Outfall 001/002
Test Start Date 08/07/06

Permittee Dominion Power Possum Point
Period Reviewed: QT X SA ___ AN ___ Other
1st ___ 2nd ___ 3rd ___ 4th ___

Testing Laboratory CBI

#	ACUTE DATA PARAMETER - (Some are organism specific)	YES	NO	Manual or Permit Req.
1.	Was the test performed as per schedule?	X		Permit
2.	**Was the correct test performed?**	X		Permit
3.	**Was the correct type of sample used?**	X		Permit
4.	Was the chain of custody form supplied with the test report?	X		DEQ guidance
5.	Were pH, temp, Cl of sample checked at sample site (or within 15 minutes of sample retrieval)?	X		DEQ guidance
6.	If the sample was collected for off-site toxicity testing, was it held at 0-6° C during collection (composite) or chilled immediately following collection (grab)?	X		8.5.7.1
7.	**Was the sample packed in ice and chilled to 0-6° C for transport to an off-site toxicity testing facility? NOTE: Frozen samples are not valid! NOTE: An exception to this would be for samples that are delivered for same day testing that may not have a chance to cool to this temperature range.**	X		**8.5.1, 8.5.7.1**
8.	Were temperature and sample description recorded upon receipt by the lab?	X		8.6.1
9.	Does description (visual, obvious scent) of sample (when received at lab) seem typical for this type of facility?	X		DEQ guidance
10.	**Was the test initiated within 36 hours of sample retrieval from sampler?** NOTE: In isolated cases, an extension to this holding time can be allowed by DEQ (CO). Documentation of this permission must be presented with the test report and include the supportive data mentioned in 8.5.4 and 8.7.1	X		8.5.4, 8.6.2, and 8.7.1
11.	If filtration was necessary to remove debris or indigenous organisms, was a sieve with ∃60 Φm mesh openings (or larger) used?	X		7.3.5
12.	a. Was the sample DO ≥ 4.0 mg/l and ≤ saturation at 25° C prior to test initiation? (applies to *C. dubia, P. promelas*) b. Was the sample DO ≥ 4.0 mg/l and ≤ saturation at 25° C at 20 ppt salinity prior to test initiation? (applies to *M. bahia, C. variegatus)* c. Was the sample DO ≥ 6.0 mg/l and ≤ saturation at 12° C prior to test initiation? (applies to *O. mykiss*)		X	9.1.7 9.1.8
13.	**If item 12. is "NO" for meeting the minimum DO levels for the organism used, was the DO adjusted up to the acceptable range (see a., b., and c. above) prior to test initiation?**	**X**		**9.1.8**
14.	If the DO of the sample was greater than saturation at the test temperature, was the sample aerated to reduce it prior to test initiation?	X		9.1.8
15.	If the sample had a chlorine residual, was it dechlorinated?	N/A		9.1.6
16.	**Did the permit allow for dechlorination of the sample? (Only if it contains a compliance schedule for Cl limit or for dechlorination)**	N/A		DEQ guidance Permit

Attachment 9

#	ACUTE DATA PARAMETER - (Some are organism specific)	YES	NO	Manual or Permit Req.
17.	If the sample was dechlorinated, were controls treated with the same amount of dechlorination agent and run with untreated controls? (determines adverse effect of agent)	N/A		9.1.6
18.	Was the sample pH within the 6.0 - 9.0 range?	X		9.1.9
19.	If 18. is NO, **and** if the sample pH was adjusted, were parallel tests, one with an adjusted pH and one without an adjusted pH, run? ***NOTE: DEQ prefers that the effluent is used "as is", with regard to pH.***	N/A		9.1.9
20.	If the pH was adjusted, was it adjusted to pH 7.0 (Freshwater tests) or pH 8.0 (Saltwater tests) by adding 1N NaOH or 1N HCl?	N/A		9.1.9
21.	**Was the age of the organisms in the correct range at test initiation?** ***a. P. promelas and C. variegatus* - 1-14 days old, within 24 hours of age of each other** ***b. O. mykiss* – 15 (swim-up or yolk sac adsorption)-30 days old** ***c. C. dubia* - <24 hours old** ***d. M. bahia* - 1-5 days old, within 24 hours of age of each other**	X X		**Tables 11-16**
22.	Were 5 geometric test concentrations (preferably 0.5 series) and 1 control (with the appropriate number of replicates) set up for LC_{50} or multi-dilution NOAEC tests?	X		2.3 9.3.2
23.	If the test organisms were obtained from an outside source, was a reference toxicant test run concurrently?	N/A		4.7.3
24.	If the concurrently run reference toxicant test should fail to meet acceptability criteria, was the reference toxicant test repeated?	N/A		4.7.5
25.	Was the test chamber size acceptable? *a. P. promelas, C. variegatus, M. bahia* - 250 ml minimum *b. O. mykiss* - 5000 ml minimum *c. C. dubia* - 30 ml minimum	 X X		Tables 12-19
26.	Was the sample volume acceptable? *a. P. promelas, C. variegatus, M. bahia* - 200 ml minimum *b. O. mykiss* - 4000 ml minimum *c. C. dubia* - 15 ml minimum	X X		Tables 12-19
27.	Was the minimum number of replicates per concentration represented? *a.* 2 replicates (LC_{50} tests) - *P. promelas, O. mykiss, C. variegatus, M. bahia* *Note: Some permits may specify 4 reps with 5 organisms in each for the NOAEC test, which is acceptable.* *b.* 4 replicates (LC_{50} tests) – *C. dubia*	X X		Tables 12-19
28.	Was the minimum number of organisms in each replicate (the number of organisms times the number of replicates must equal 20 or more)? *a.* 10 organisms (LC_{50} tests) - *P. promelas, O. mykiss, C. variegatus, M. bahia* *Note: Some permits may specify 4 reps with 5 organisms in each for the NOAEC test, which is acceptable.* *b.* 5 organisms (LC_{50} tests) – *C. dubia*	X X		Tables 12-19
29.	a. Was the dilution water synthetic moderately hard water or 20% DMW? (applies to freshwater species *P. promelas, O. mykiss, C. dubia)* b. Was the dilution water synthetic sea water made with deionized water and sea salts adjusted to 20 $\pm$ 2 ppt, or the same salinity as the receiving water? (applies to salt water species, *C. variegatus, M. bahia)*	X		7.1.1.1. 7.2.1. Table 7.
30.	Freshwater - Was the dilution water hardness within the range of 80-100 mg $CaCO_3$/L?	X		Tables 7, 8

#	ACUTE DATA PARAMETER - (Some are organism specific)	YES	NO	Manual or Permit Req.
31.	Freshwater - Was the dilution water alkalinity within the 57-64 mg $CaCO_3$/L?	X		Tables 7, 8
32.	Freshwater - Was the dilution water pH within the range of 7.4 – 7.8, or 7.9 – 8.3 for mineral water?	X		Tables 7, 8
33.	**a. The average test temperature for tests using *P. promelas, C. dubia C. variegatus, or M. bahia* should be 25±1° C upon initiation and throughout the test. Did the test temperatures deviate by not more than 3° C (maximum minus minimum temperature) during the test?** **b. The average test temperature for tests using *O. mykiss* should be 12±1° C upon initiation and throughout the test. Did the test temperatures deviate by not more than 3° C (maximum minus minimum temperature) during the test?**	**X**		**9.12.1, Tables 12-19, and DEQ guidance**
34.	**Was the temperature measured daily in one replicate of each concentration?**	X		4.6.1 10.2.1.4
NOTE	*If surrogate sample chambers were used for probe measurements, they MUST have contained the same number of organisms as the test chambers and have been subject to the same conditions as the test chambers; else, the data are not acceptable. This applies to pH, DO and conductivity readings.*			
35.	Was the DO measured daily in one replicate of each concentration? .	X		4.6.1 10.2.1
36.	If the DO dropped to <4.0 mg/l, was aeration initiated? (Exceptions to this requirement are for tests *using C. dubia,* where aeration is impractical.)	N/A		9.14.1
37.	If aeration was necessary (and acceptable), were **all** test chambers aerated for the duration of the test, and the time at which aeration was initiated recorded?	N/A		9.14.2
38.	If aeration was necessary (and acceptable), was it applied at a maximum rate of 100 bubbles/minute so as not to cause injury to the organisms?	N/A		9.14.2
39.	Was pH measured at the 0, 24, and 48 hours for a 48-hour test, or at 0, 24, 48 hours, after renewal, 72 and at 96 hours for a 96-hour test in one replicate of each sample concentration?	X		4.6.1 10.2.1
40.	a. For a freshwater test, was conductivity measured at the beginning and end (also at renewal for 96-hour tests) of the test in the highest concentration and the control? (applies to freshwater species *P. promelas, O. mykiss, C. dubia)* **NOTE: It is recommended by DEQ that conductivity is measured in one replicate of each concentration at the beginning, renewal, and termination of a test.** b. For a saltwater test, was salinity measured at the beginning and end (also at renewal for 96-hour tests) of the test in the highest concentration and the control? (applies to salt water species, *C. variegatus, M. bahia)* **NOTE: It is recommended by DEQ that salinity is measured in one replicate of each concentration at the beginning, renewal, and termination of a test.**	N/A		10.2.1, 10.2.3 and DEQ guidance
41.	For freshwater tests, was the alkalinity measured in 100% effluent and the control at the beginning of the test and at test renewal if the test is 96 hours in duration?	X		9.1.4 10.2.1.1
42.	For freshwater tests, was the hardness measured in 100% effluent and the control at the beginning of the test and at test renewal if the test is 96 hours in duration?	X		9.1.4 10.2.1.1
43.	Was total ammonia measured in the effluent where toxicity may be contributed by unionized ammonia (i.e., where total ammonia ∃5 mg/l)?	X		9.1.5

#	ACUTE DATA PARAMETER - (Some are organism specific)	YES	NO	Manual or Permit Req.
44.	a. For a test using *Mysidopsis bahia*, were the mysids fed *Artemia* nauplii daily? b. For a 96-hour test using *Pimephales promelas,* or *Cyprinodon variegatus*, were the larvae fed prior to sample renewal at 48 hours?	N/A		9.11.1
45.	For a 96-hour test using *Pimephales promelas, Oncorhynchus mykiss,* or *Cyprinodon variegatus*, was the sample used for renewal the original sample?	N/A		8.5.4
46.	Was the daily photoperiod 16 hours light/8 hours dark?	X		9.10
47.	Were the surviving organisms counted daily in all test chambers?	X		10.1.4
48.	**Was the test terminated at 48±1 hours (less than 47 hours invalidates the test) or 96±1 hours (less than 95 hours invalidates the test)?**	**X**		**DEQ guidance**
49.	Was the percent survival in each concentration recorded at the end of the test?	X		DEQ guidance
50.	**Was the percent survival in the controls ≥90%?**	X		4.9.19.16.1
51.	Was the LC_{50} correctly determined?	X		11.2
52.	If the acute test was run in conjunction with a chronic test using the same species, was the acute test initiated with the second or third sample pulled for the chronic test? (Any sample other than the same sample used to initiate the chronic test is preferred.)	X		DEQ guidance

Comments on the Acute Data Review Form

Items in bold type (and shaded) are significant in that if they are answered "NO", the test is automatically deemed "not acceptable" and must be repeated to fulfill permit TMP requirements. Bold type items are numbers 2, 3, 7, 10, 13, 16, 21, 22, 23, 33, 34, 48 and 50.

RESPONSE GUIDE

1. Yes
2. Yes
3. Yes
4. Yes
5. Yes, preferably
6. Yes
7. Yes
8. Yes
9. Yes or N/A
10. Yes
11. Yes or N/A
12. Yes
13. If 12 "No", then Yes
14. Yes
15. Yes or No
16. Yes if 15. is "Yes", or No if 15. is "No"
17. Yes if 15. is "Yes", or N/A
18. Yes or No
19. to 35 Yes
36. Yes or N/A
37. to 52 Yes

RATING

ACCEPTABLE	NOT ACCEPTABLE

Comments: The acute test passed all decision criteria and has been deemed valid. The NOAEC was 100 equaling a TUa of 1.0.

CHRONIC TEST DATA REVIEW CHECKLIST

Revised October 13, 2004

Referencing:

Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, Fourth Edition, EPA 821-R-02-013, October 2002 (Citations preceded by "F")

and

Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Marine and Estuarine Organisms, Third Edition, EPA 821-R-02-014, October 2002 (Citations preceded by "S")

Permit Number VA0002071 Outfall 001/002 Permittee Dominion Power-Possum Point

Test Start Date 08/02/06

Period Reviewed: QT X SA ___ AN ___ Other ___
1st ___ 2nd ___ 3rd ___ 4th ___

Testing Laboratory CBI

#	CHRONIC DATA PARAMETERS - (Some are organism specific)	YES	NO	Manual or Permit Req.
1.	Was the test performed as per schedule?	X		Permit
2.	**Was the correct test performed?**	X		Permit
3.	**Was the correct type of sample collected at each sampling event?**	X		Permit
4.	**Was a minimum of 3 samples collected?**	X		F-8.3.2
5.	Were pH, temp, Cl of sample checked at sample site (or within 15 minutes of sample retrieval) for each sample?	X		DEQ guidance F-8.5.3
6.	If the samples were collected for off-site toxicity testing, were they held at 0-6° C during collection (composite) or chilled immediately following collection (grab)?	X		F-8.5.2 S-8.5.1
7.	**Was each sample packed in ice and chilled to 0-6° C for transport? NOTE: Frozen samples are not valid! NOTE: An exception to this would be for samples that are delivered for same day testing that may not have a chance to cool to this temperature range.**	X		F-8.5.7.1 S-8.5.7.1
8.	Were temperature and sample description recorded upon receipt of each sample?	X		S-8.6.1 DEQ guidance
9.	Does the description (visual, obvious scent) of each sample (when received at lab) seem typical for this type of facility?	X		DEQ guidance
10.	**Was the test initiated within 36 hours of sample retrieval from sampler?** NOTE: In isolated cases, an extension to this holding time can be allowed by DEQ (CO). Documentation of this permission must be presented with the test report and include the supportive data mentioned in 8.5.4 and 8.7.1	X		F-8.5.4 S-8.5.4
11.	**Was the last use of the sample within 72 HOURS AFTER FIRST USE (sample age should not exceed 108 hours)?**	X		**F-8.5.4** **S-8.5.4**
12.	If filtration was necessary to remove debris or indigenous organisms, was a sieve with ∃60 Φm mesh openings (or larger) used?	X		F-8.8.2 S-7.3.4

#	CHRONIC DATA PARAMETERS - (Some are organism specific)	YES	NO	Manual or Permit Req.
13.	**a. Was the sample DO ≥ 4.0 mg/l and ≤ saturation at 25° C prior to test initiation? (applies *to C. dubia* and *P. promelas)*** **b. Was the sample DO ≥ 4.0 mg/l and ≤ saturation at 25° C and 20 g/kg salinity prior to test initiation? (applies to *C. variegatus)*** **c. Was the sample DO ≥ 4.0 mg/l and ≤ saturation at 26° C and 20 g/kg salinity prior to test initiation? (applied to *M. bahia*)**		**X**	**F-8.8.3** **S-8.8.4**
14.	**If item 13. is "NO" for meeting the minimum DO levels for the organism used, was the DO adjusted to the acceptable range (see a., b., and c. above) prior to test initiation?**	**X**		**F-8.8.3**
15.	If the DO of the sample was greater than saturation at the test temperature, was the sample aerated to reduce it prior to test initiation?	X		F-8.8.3
16.	If the sample had a chlorine residual, was it dechlorinated?	N/A		F-8.8.7 S-8.8.7
17.	Did the permit allow for dechlorination of the sample? (Only if it contains a compliance schedule for a chlorine limit or for dechlorination)	N/A		DEQ guidance
18.	If the sample was dechlorinated, were controls treated with the same amount of dechlorination agent and run with untreated controls? (This determines any adverse effect of the dechlorination agent.)	N/A		F-8.8.7 S-8.8.7
19.	Was each sample pH within the 6.0 - 9.0 range?	X		F-8.8.8 S-8.8.9
20.	If 19. is NO, **and** if the sample pH was adjusted, were parallel tests, one with an adjusted pH and one without an adjusted pH, run? ***NOTE: DEQ prefers that the effluent is used "as is", with regard to pH due to the problems associated with multiple samples.***	N/A		F-8.8.8 S-8.8.9
21.	If the pH was adjusted, was it adjusted to pH 7.0 (Freshwater tests) or pH 8.0 (Saltwater tests) by adding 1N NaOH or 1N HCl?	N/A		F-8.8.8 S 8.8.9
22.	**Was the age of the organisms in the correct range at test initiation?** **a. *P. promelas* and *C. variegatus* - <24 hours old preferred (0-48 hours old is acceptable if the organisms are all within 24 hours in age of each other)** **b. *C. dubia* - <24 hours old, within 8 hours of age of each other?** **c. *M. bahia* - 7 days old, within 24 hours of age of each other**	 X X		F-Tbl 11-1 S-Tbl 11-3 S-11.10.2.2 F-Tbl 13-3 S-Tbl 13-3
23.	**If the test organisms were obtained from an outside source, was a reference toxicant test run concurrently?**	**N/A**		**F-4.7.1** **4.7.3** **S-4.7.1**
24.	If the concurrently run reference toxicant test should fail to meet acceptability criteria, was the reference toxicant test repeated?	N/A		F-4.7.4 S-4.7.4
25.	**Was a minimum of 5 test concentrations and 1 control set up using concentrations appropriate for the limit or monitoring endpoint specified in the permit?**	**X**		**F-8.10.** **S-8.10**
26.	Was the test chamber size acceptable? a. *P. promelas* - 500 ml minimum b. *C. variegatus* - 300-1000 ml c. *M. bahia* - 400 ml beaker or 8 oz cup (236 ml capacity) d. *C. dubia* - 30 ml minimum	X X		F-Tbl 11-1 S-Tbl 11-3 F-Tbl 13-3 S-Tbl 13-3

#	CHRONIC DATA PARAMETERS - (Some are organism specific)	YES	NO	Manual or Permit Req.
27.	Was the sample volume acceptable? *a. P. promelas* - 250 ml minimum *b. C. variegatus* - 250-750 ml *c. M. bahia* - 150 ml *d. C. dubia* - 15 ml minimum	X X		F-Tbl 11-1 S-Tbl 11-3 F-Tbl 13-3 S-Tbl 13-3
28.	Was the minimum number of replicates per concentration represented? *a.* 4 replicates - *P. promelas, C. variegatus* *b.* 8 replicates - *M. bahia* *c.* 10 replicates - *C. dubia*	X X		F-Tbl 11-1 S-Tbl 11-3 F-Tbl 13-3 S-Tbl 13-3
29.	Was the minimum number of organisms in each replicate? a. 10 organisms - *P. promelas, C. variegatus,* b. 5 organisms - *M. bahia* c. 1 organism - *C. dubia*	X X		F-Tbl 11-1 S-Tbl 11-3 F-Tbl 13-3 S-Tbl 13-3
30.	a. Was the dilution water synthetic moderately hard water or 20% DMW? (applies to freshwater species *P. promelas, C. dubia)* b. Was the dilution water synthetic sea water made with deionized water and sea salts adjusted to 20 $\pm$ 2 ppt, or the same salinity as the receiving water? *(*applies to salt water species, *C. variegatus, M. bahia)*	X		F-7.1.1.1 S-14.6.10.2 DEQ guidance
31.	Freshwater - Was the dilution water hardness within the approximate range of 80-100 mg $CaCO_3$/L?	X		F-Tables 3 & 4
32.	Freshwater - Was the dilution water alkalinity within the approximate range of 57- 64 mg $CaCO_3$/L?	X		F-Tables 3 & 4
33.	Freshwater - Was the dilution water pH within the approximate range of 7.4 – 7.8; or 7.9 – 8.3 for mineral water?	X		F-Tables 3 & 4
34.	**a. The average test temperature for tests using *P. promelas, C. dubia, or C. variegatus* should be 25$\pm$1° C upon initiation and throughout the test. Did the test temperatures deviate by more than 3° C (maximum minus minimum temperature) during the test?** **b. The average test temperature for tests using *M. bahia* should be 26$\pm$1° C upon initiation and throughout the test. Did the test temperatures deviate by more than 3° C (maximum minus minimum temperature) during the test?**	X		**F-4.6.1** **S-Table 3**
35.	**Was the temperature measured daily in one replicate of each concentration?**	X		**F-4.6.1** **S-11.10.7.1.2**
NOTE	***If surrogate sample chambers were used for probe measurements, they MUST have contained the same number of organisms as the test chambers and have been subject to the same conditions as the test chambers; else, the data are not acceptable. This applies to pH, DO and conductivity readings.***			
36.	Was the DO measured daily, at the beginning and end of each 24 hour period, in one replicate of each concentration?	X		F-4.6.1 S-13.10.6.1.1
37.	If the DO dropped to <4.0 mg/l in a test using *P. promelas, C. variegatus*, or *M. bahia,* was aeration initiated? (For a test using *C. dubia*, a low DO sample should be aerated prior to test initiation or renewal, as aeration with the organisms present is impractical.)	N/A		F-8.8.4. S-11.10.4.1

#	CHRONIC DATA PARAMETERS - (Some are organism specific)	YES	NO	Manual or Permit Req.
38.	If aeration was necessary (and acceptable), were **all** test chambers aerated for the duration of the test, and the time at which aeration was initiated recorded? (Not applicable to tests using *C. dubia*)	N/A		F-8.8.4.2 S-11.10.4.1
39.	If aeration was necessary (and acceptable), was it applied at a maximum rate of 100 bubbles/minute so as not to cause injury to the organisms?	N/A		F-8.8.4.2 S-11.10.4.1
40.	Was pH measured at test initiation and at the end of each 24-hour period in one replicate of each concentration?	X		F-8.8.5 S-11.10.7.1.2
41.	Was the pH measured in the effluent sample each day before new test solutions are made?	X		F-8.8.6 S-11.10.7.1.3
42.	If toxicity may be caused by un-ionized ammonia (or where the ammonia is ∃5.0 mg/l), was total ammonia measured?	X		F-8.8.6
43.	a. For a freshwater test, was conductivity measured at the beginning of each 24-hour period in the 100% sample and the control? *(*applies to freshwater species *P. promelas, C. dubia)* ***NOTE: It is recommended that conductivity is measured in one replicate of each dilution at the beginning of each 24-hour period.*** b. For a saltwater test, was the salinity measured at the end of each 24-hour period in one replicate of each concentration? *(*applies to salt water species, *C. variegatus, M. bahia)*	X		F-8.8.5 DEQ guidance S-11.10.7.1.2
44.	For both freshwater and saltwater tests, was the alkalinity measured in 100% effluent and the control at test initiation, and for each new sample? (For saltwater tests, the effluent alkalinity should be measured prior to adjustment with salts.)	X		F-8.8.5.1 S-8.8.5.1
45.	For both freshwater and saltwater tests, was the hardness measured in 100% effluent and the control at test initiation, and for each new sample? (For saltwater tests, the effluent hardness should be measured prior to adjustment with salts.)	X		F-8.8.5.1 S-8.8.5.1
46.	a. For a test using *Mysidopsis bahia*, were the mysids fed *Artemia* nauplii (at a rate of 75/mysid) twice daily? b. For a test using *Pimephales promelas*, were the larvae fed 0.15 ml concentrated *Artemia* nauplii a minimum of twice daily? c. For a test using *Cyprinodon variegatus*, were the larvae fed *Artemia* nauplii once per day at a rate of 0.1 g (wet weight) for days 0-2, and 0.15 g (wet weight) for days 3-6? d. For a test using *Ceriodaphnia dubia*, were the organisms fed 0.1 ml YCT and 0.1 ml algae per day after renewal?	X X		F-11.10.5.1 S-11.10.5 F-13.10.5.1
47.	Was the sample data for the renewal days consistent with the data for the first use of that sample?	X		DEQ guidance
48.	Was the daily photoperiod 16 hours light/8 hours dark?	X		F-13.10.3.1 S-11.10.3
49.	Were the surviving organisms counted daily in all test chambers?	X		F-11.10.6.2.1 S-11.10.7.2.1
50.	Were the number of young produced recorded daily for the *C. dubia* test?	X		F-13.10.6.2.3
51.	Was the occurrence of males present noted in the *C. dubia* test? (Tests with no males noted may be indicative of no males present)	X		F-13.10.9.3
52.	**Were individual treatments with males (1 or 2 replicates) and blocked rows containing ≥ 50% males (3 replicates or more) excluded from data analysis for the reproduction**	**X**		**F-13.13.1.4**

#	CHRONIC DATA PARAMETERS - (Some are organism specific)	YES	NO	Manual or Permit Req.
	endpoint? (The males are used for survival analysis)			
53.	Were the daily renewals of chronic test solutions performed no earlier or later than subsequent 24±2 hour periods from test initiation?	X		DEQ guidance
54.	**a. For tests using *P. promelas, C. variegatus*, or *M. bahia*, was the test terminated 7 days (this is interpreted as 7 24-hour periods) and within ± 1 hour of the time of day at which it was initiated?** **b. For tests using *C. dubia*, was the test terminated when 60% or more of the surviving females in the controls had produced their third brood within 8 days?**	X X		**F-Table 1 and DEQ guidance** **S-11.10.9.1** **F-13.10.9.1**
55.	Was the percent survival in each concentration recorded at the end of the test?	X		DEQ guidance
56.	**Was the percent survival in the controls ≥80%?**	X		**F-13.12.1** **F-11.12.1** **S-11.12.1** **S-14.12.1**
57.	**Did the test meet the additional acceptability criteria?** **a. *P. promelas* - For tests initiated with larvae ≤ 24 hours old, was the average dry weight of the control larvae surviving at the end of the test ≥ 0.25 mg?** **b. *C. variegatus* - For tests initiated with larvae ≤ 24 hours old, was the average dry weight of control larvae ≥ 0.60 mg (unpreserved), or ≥ 0.50 mg (preserved)?** **c. *M. bahia* - Was the average weight of the controls ≥ 0.20 mg?** **d. *C. dubia* - Did reproduction in the controls average 15 or more young per surviving female? NOTE: Fourth brood neonates should not be counted. In addition to these test acceptability criteria, if fewer than eight replicates in the control remain after excluding males and blocks with 50% or more surviving organisms identified as males, the test is invalid and must be repeated with newly collected samples.**	X X		**F-11.12.1** **S-11.12.1** **S-14.12.1** **F-13.2.1** **13.13.1.4**
58.	Were the data Arcsin transformed prior to statistical analysis (*M. bahia, C. variegatus, P. promelas* – survival)?	X		S-Figure 5
59.	Was the NOEC correctly determined using the appropriate statistical method?	X		F-9.1
60.	**Was the PMSD for the sublethal endpoint within upper bounds? (applicable for tests performed after 12/1/02)** **a. *P. promelas* growth - 30%** **b. *C. dubia* reproduction - 47%** **c. *M. bahia* growth - 37%** **If the PMSD was greater than the criterion but significant reduction identified at the IWC then the test is acceptable (A bold item?)**	 X X		**F,S-10.2.8**
61.	**If the PMSD exceeded the upper bound and no significant reduction was identified at the IWC, was the test repeated?**	**N/A**		**F,S-10.2.8.2.4.2**
62.	Did the test result in a calculable NOEC (Result reported as "<" is not acceptable. Lower dilutions should have been added or the test rerun to determine the result.)	X		DEQ guidance
63.	Was the IC_{25} reported for the test?	X		F-9.1
64.	Was the LC_{50} at 48 hours reported for the test?	X		DEQ guidance

Items in bold type (and shaded) are significant in that if they are answered "NO", the test is automatically invalidated and must be repeated to fulfill permit TMP requirements. Bold type items are numbers 2, 3, 4, 7, 10, 11, 14, 22, 23, 25, 34, 35, 52, 54, 56, 57, 60 and 61.

RESPONSE GUIDE

1. Yes
2. Yes
3. Yes
4. Yes
5. Yes, preferably
6. Yes
7. Yes
8. Yes, preferably
9. Yes, preferably; NA
10. Yes, unless granted variance
11. Yes, unless granted variance
12. Yes, or NA
13. Yes
14. If 13. is "No", then Yes; NA
15. Yes; No; NA
16. Yes; No; NA
17. If 16. is "Yes", then Yes
18. If 16. is "Yes", then Yes
19. Yes; No
20. Yes; NA
21. Yes; NA
22. Yes
23. Yes; NA
24. Yes; NA
25. Yes
26. Yes
27. Yes
28. Yes
29. Yes
30. Yes
31. Yes
32. Yes
33. Yes
34. No
35. Yes
36. Yes
37. Yes; NA
38. If 37. is "Yes", then Yes; NA
39. If 37. is "Yes", then Yes; NA
40 Yes
41. Yes
42. Yes; NA
43. Yes
44. Yes
45. Yes
46. Yes
47. Yes
48. Yes
49. Yes
50. Yes
51. Yes; NA
52. Yes
53. Yes, preferably
54. Yes
55. Yes
56. Yes
57. Yes
58. Yes
59. Yes
60. Yes
61. Yes
62-64. Yes

RESULTS

ACCEPTABLE	NOT ACCEPTABLE

COMMENTS: The chronic test passed all decision criteria and has been deemed valid. The NOEC was 100% equaling a TUc of 1.0.

ACUTE TEST DATA REVIEW CHECKLIST
Revised October 13, 2004

Referencing "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms", Fifth Edition, EPA 821-R-02-012, October 2002

Permit Number VA0002071 Outfall 004 Permittee Dominion Power Possum Point
Test Start Date 05/22/06 Period Reviewed: QT X SA ___ AN ___ Other
1st ___ 2nd ___ 3rd ___ 4th ___

Testing Laboratory CBI

#	ACUTE DATA PARAMETER - (Some are organism specific)	YES	NO	Manual or Permit Req.
1.	Was the test performed as per schedule?	X		Permit
2.	**Was the correct test performed?**	X		Permit
3.	**Was the correct type of sample used?**	X		Permit
4.	Was the chain of custody form supplied with the test report?	X		DEQ guidance
5.	Were pH, temp, Cl of sample checked at sample site (or within 15 minutes of sample retrieval)?	X		DEQ guidance
6.	If the sample was collected for off-site toxicity testing, was it held at 0-6° C during collection (composite) or chilled immediately following collection (grab)?	X		8.5.7.1
7.	**Was the sample packed in ice and chilled to 0-6° C for transport to an off-site toxicity testing facility? NOTE: Frozen samples are not valid! NOTE: An exception to this would be for samples that are delivered for same day testing that may not have a chance to cool to this temperature range.**	X		**8.5.1, 8.5.7.1**
8.	Were temperature and sample description recorded upon receipt by the lab?	X		8.6.1
9.	Does description (visual, obvious scent) of sample (when received at lab) seem typical for this type of facility?	X		DEQ guidance
10.	**Was the test initiated within 36 hours of sample retrieval from sampler?** NOTE: In isolated cases, an extension to this holding time can be allowed by DEQ (CO). Documentation of this permission must be presented with the test report and include the supportive data mentioned in 8.5.4 and 8.7.1	X		8.5.4, 8.6.2, and 8.7.1
11.	If filtration was necessary to remove debris or indigenous organisms, was a sieve with ∃60 Φm mesh openings (or larger) used?	X		7.3.5
12.	a. Was the sample DO ≥ 4.0 mg/l and ≤ saturation at 25° C prior to test initiation? (applies to *C. dubia, P. promelas*) b. Was the sample DO ≥ 4.0 mg/l and ≤ saturation at 25° C at 20 ppt salinity prior to test initiation? (applies to *M. bahia, C. variegatus)* c. Was the sample DO ≥ 6.0 mg/l and ≤ saturation at 12° C prior to test initiation? (applies to *O. mykiss*)		X	9.1.7 9.1.8
13.	**If item 12. is "NO" for meeting the minimum DO levels for the organism used, was the DO adjusted up to the acceptable range (see a., b., and c. above) prior to test initiation?**	**X**		**9.1.8**
14.	If the DO of the sample was greater than saturation at the test temperature, was the sample aerated to reduce it prior to test initiation?	X		9.1.8
15.	If the sample had a chlorine residual, was it dechlorinated?	N/A		9.1.6
16.	**Did the permit allow for dechlorination of the sample? (Only if it contains a compliance schedule for Cl limit or for dechlorination)**	N/A		DEQ guidance Permit

#	ACUTE DATA PARAMETER - (Some are organism specific)	YES	NO	Manual or Permit Req.
17.	If the sample was dechlorinated, were controls treated with the same amount of dechlorination agent and run with untreated controls? (determines adverse effect of agent)	N/A		9.1.6
18.	Was the sample pH within the 6.0 - 9.0 range?	X		9.1.9
19.	If 18. is NO, **and** if the sample pH was adjusted, were parallel tests, one with an adjusted pH and one without an adjusted pH, run? ***NOTE: DEQ prefers that the effluent is used "as is", with regard to pH.***	N/A		9.1.9
20.	If the pH was adjusted, was it adjusted to pH 7.0 (Freshwater tests) or pH 8.0 (Saltwater tests) by adding 1N NaOH or 1N HCl?	N/A		9.1.9
21.	**Was the age of the organisms in the correct range at test initiation?** **a. *P. promelas and C. variegatus* - 1-14 days old, within 24 hours of age of each other** **b. *O. mykiss* – 15 (swim-up or yolk sac adsorption)-30 days old** **c. *C. dubia* - <24 hours old** **d. *M. bahia* - 1-5 days old, within 24 hours of age of each other**	X		**Tables 11-16**
22.	Were 5 geometric test concentrations (preferably 0.5 series) and 1 control (with the appropriate number of replicates) set up for LC_{50} or multi-dilution NOAEC tests?	X		2.3 9.3.2
23.	If the test organisms were obtained from an outside source, was a reference toxicant test run concurrently?	N/A		4.7.3
24.	If the concurrently run reference toxicant test should fail to meet acceptability criteria, was the reference toxicant test repeated?	N/A		4.7.5
25.	Was the test chamber size acceptable? a. *P. promelas, C. variegatus, M. bahia* - 250 ml minimum b. *O. mykiss* - 5000 ml minimum c. *C. dubia* - 30 ml minimum	X		Tables 12-19
26.	Was the sample volume acceptable? a. *P. promelas, C. variegatus, M. bahia* - 200 ml minimum b. *O. mykiss* - 4000 ml minimum c. *C. dubia* - 15 ml minimum	X		Tables 12-19
27.	Was the minimum number of replicates per concentration represented? a. 2 replicates (LC_{50} tests) - *P. promelas, O. mykiss, C. variegatus, M. bahia* *Note: Some permits may specify 4 reps with 5 organisms in each for the NOAEC test, which is acceptable.* b. 4 replicates (LC_{50} tests) – *C. dubia*	X		Tables 12-19
28.	Was the minimum number of organisms in each replicate (the number of organisms times the number of replicates must equal 20 or more)? a. 10 organisms (LC_{50} tests) - *P. promelas, O. mykiss, C. variegatus, M. bahia* *Note: Some permits may specify 4 reps with 5 organisms in each for the NOAEC test, which is acceptable.* b. 5 organisms (LC_{50} tests) – *C. dubia*	X		Tables 12-19
29.	a. Was the dilution water synthetic moderately hard water or 20% DMW? (applies to freshwater species *P. promelas, O. mykiss, C. dubia)* b. Was the dilution water synthetic sea water made with deionized water and sea salts adjusted to 20 $\pm$ 2 ppt, or the same salinity as the receiving water? (applies to salt water species, *C. variegatus, M. bahia)*	X		7.1.1.1. 7.2.1. Table 7.
30.	Freshwater - Was the dilution water hardness within the range of 80-100 mg $CaCO_3$/L?	X		Tables 7, 8
31.	Freshwater - Was the dilution water alkalinity within the 57-64 mg $CaCO_3$/L?	X		Tables 7, 8
32.	Freshwater - Was the dilution water pH within the range of 7.4 – 7.8, or 7.9 – 8.3 for mineral water?	X		Tables 7, 8

#	ACUTE DATA PARAMETER - (Some are organism specific)	YES	NO	Manual or Permit Req.
33.	**a. The average test temperature for tests using *P. promelas, C. dubia C. variegatus, or M. bahia* should be 25±1° C upon initiation and throughout the test. Did the test temperatures deviate by not more than 3° C (maximum minus minimum temperature) during the test?** **b. The average test temperature for tests using *O. mykiss* should be 12±1° C upon initiation and throughout the test. Did the test temperatures deviate by not more than 3° C (maximum minus minimum temperature) during the test?**	X		**9.12.1, Tables 12-19, and DEQ guidance**
34.	**Was the temperature measured daily in one replicate of each concentration?**	X		4.6.1 10.2.1.4
NOTE	*If surrogate sample chambers were used for probe measurements, they MUST have contained the same number of organisms as the test chambers and have been subject to the same conditions as the test chambers; else, the data are not acceptable. This applies to pH, DO and conductivity readings.*			
35.	Was the DO measured daily in one replicate of each concentration? .	X		4.6.1 10.2.1
36.	If the DO dropped to <4.0 mg/l, was aeration initiated? (Exceptions to this requirement are for tests *using C. dubia,* where aeration is impractical.)	N/A		9.14.1
37.	If aeration was necessary (and acceptable), were **all** test chambers aerated for the duration of the test, and the time at which aeration was initiated recorded?	N/A		9.14.2
38.	If aeration was necessary (and acceptable), was it applied at a maximum rate of 100 bubbles/minute so as not to cause injury to the organisms?	N/A		9.14.2
39.	Was pH measured at the 0, 24, and 48 hours for a 48-hour test, or at 0, 24, 48 hours, after renewal, 72 and at 96 hours for a 96-hour test in one replicate of each sample concentration?	X		4.6.1 10.2.1
40.	a. For a freshwater test, was conductivity measured at the beginning and end (also at renewal for 96-hour tests) of the test in the highest concentration and the control? (applies to freshwater species *P. promelas, O. mykiss, C. dubia)* **NOTE: It is recommended by DEQ that conductivity is measured in one replicate of each concentration at the beginning, renewal, and termination of a test.** b. For a saltwater test, was salinity measured at the beginning and end (also at renewal for 96-hour tests) of the test in the highest concentration and the control? (applies to salt water species, *C. variegatus, M. bahia)* **NOTE: It is recommended by DEQ that salinity is measured in one replicate of each concentration at the beginning, renewal, and termination of a test.**	N/A		10.2.1, 10.2.3 and DEQ guidance
41.	For freshwater tests, was the alkalinity measured in 100% effluent and the control at the beginning of the test and at test renewal if the test is 96 hours in duration?	X		9.1.4 10.2.1.1
42.	For freshwater tests, was the hardness measured in 100% effluent and the control at the beginning of the test and at test renewal if the test is 96 hours in duration?	X		9.1.4 10.2.1.1
43.	Was total ammonia measured in the effluent where toxicity may be contributed by unionized ammonia (i.e., where total ammonia ∃5 mg/l)?	X		9.1.5
44.	a. For a test using *Mysidopsis bahia*, were the mysids fed *Artemia* nauplii daily? b. For a 96-hour test using *Pimephales promelas,* or *Cyprinodon variegatus*, were the larvae fed prior to sample renewal at 48 hours?	N/A		9.11.1
45.	For a 96-hour test using *Pimephales promelas, Oncorhynchus mykiss,* or *Cyprinodon variegatus*, was the sample used for renewal the original sample?	N/A		8.5.4
46.	Was the daily photoperiod 16 hours light/8 hours dark?	X		9.10

#	ACUTE DATA PARAMETER - (Some are organism specific)	YES	NO	Manual or Permit Req.
47.	Were the surviving organisms counted daily in all test chambers?	X		10.1.4
48.	**Was the test terminated at 48±1 hours (less than 47 hours invalidates the test) or 96±1 hours (less than 95 hours invalidates the test)?**	**X**		**DEQ guidance**
49.	Was the percent survival in each concentration recorded at the end of the test?	X		DEQ guidance
50.	**Was the percent survival in the controls ≥90%?**	X		4.9.19.16.1
51.	Was the LC_{50} correctly determined?	X		11.2
52.	If the acute test was run in conjunction with a chronic test using the same species, was the acute test initiated with the second or third sample pulled for the chronic test? (Any sample other than the same sample used to initiate the chronic test is preferred.)	X		DEQ guidance

Comments on the Acute Data Review Form

Items in bold type (and shaded) are significant in that if they are answered "NO", the test is automatically deemed "not acceptable" and must be repeated to fulfill permit TMP requirements. Bold type items are numbers 2, 3, 7, 10, 13, 16, 21, 22, 23, 33, 34, 48 and 50.

RESPONSE GUIDE

1. Yes
2. Yes
3. Yes
4. Yes
5. Yes, preferably
6. Yes
7. Yes
8. Yes
9. Yes or N/A
10. Yes
11. Yes or N/A
12. Yes
13. If 12 "No", then Yes
14. Yes
15. Yes or No
16. Yes if 15. is "Yes", or No if 15. is "No"
17. Yes if 15. is "Yes", or N/A
18. Yes or No
19. to 35 Yes
36. Yes or N/A
37. to 52 Yes

RATING

ACCEPTABLE	NOT ACCEPTABLE

Comments

C. Dubia Aute WET test bench sheet was not included with the package.

CHRONIC TEST DATA REVIEW CHECKLIST

Revised October 13, 2004

Referencing:

Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, Fourth Edition, EPA 821-R-02-013, October 2002 (Citations preceded by "F")

and

Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Marine and Estuarine Organisms, Third Edition, EPA 821-R-02-014, October 2002 (Citations preceded by "S")

Permit Number VA0002071 Outfall 004 Permittee Dominion Power-Possum Point

Test Start Date 05/17/06

Period Reviewed: QT X SA ___ AN ___ Other ___
1st ___ 2nd ___ 3rd ___ 4th ___

Testing Laboratory CBI

#	CHRONIC DATA PARAMETERS - (Some are organism specific)	YES	NO	Manual or Permit Req.
1.	Was the test performed as per schedule?	X		Permit
2.	**Was the correct test performed?**	X		Permit
3.	**Was the correct type of sample collected at each sampling event?**	X		Permit
4.	**Was a minimum of 3 samples collected?**	X		F-8.3.2
5.	Were pH, temp, Cl of sample checked at sample site (or within 15 minutes of sample retrieval) for each sample?	X		DEQ guidance F-8.5.3
6.	If the samples were collected for off-site toxicity testing, were they held at 0-6° C during collection (composite) or chilled immediately following collection (grab)?	X		F-8.5.2 S-8.5.1
7.	**Was each sample packed in ice and chilled to 0-6° C for transport? NOTE: Frozen samples are not valid! NOTE: An exception to this would be for samples that are delivered for same day testing that may not have a chance to cool to this temperature range.**	X		F-8.5.7.1 S-8.5.7.1
8.	Were temperature and sample description recorded upon receipt of each sample?	X		S-8.6.1 DEQ guidance
9.	Does the description (visual, obvious scent) of each sample (when received at lab) seem typical for this type of facility?	X		DEQ guidance
10.	**Was the test initiated within 36 hours of sample retrieval from sampler?** NOTE: In isolated cases, an extension to this holding time can be allowed by DEQ (CO). Documentation of this permission must be presented with the test report and include the supportive data mentioned in 8.5.4 and 8.7.1	X		F-8.5.4 S-8.5.4
11.	**Was the last use of the sample within 72 HOURS AFTER FIRST USE (sample age should not exceed 108 hours)?**	X		**F-8.5.4** **S-8.5.4**
12.	If filtration was necessary to remove debris or indigenous organisms, was a sieve with ∃60 Φm mesh openings (or larger) used?	X		F-8.8.2 S-7.3.4
13.	**a. Was the sample DO ≥ 4.0 mg/l and ≤ saturation at 25° C prior to test initiation? (applies *to C. dubia* and *P. promelas)*** **b. Was the sample DO ≥ 4.0 mg/l and ≤ saturation at 25° C and 20 g/kg salinity prior to test initiation? (applies to *C. variegatus)*** **c. Was the sample DO ≥ 4.0 mg/l and ≤ saturation at 26° C and 20 g/kg salinity prior to test initiation? (applied to *M. bahia*)**		**X**	**F-8.8.3** **S-8.8.4**

#	CHRONIC DATA PARAMETERS - (Some are organism specific)	YES	NO	Manual or Permit Req.
14.	**If item 13. is "NO" for meeting the minimum DO levels for the organism used, was the DO adjusted to the acceptable range (see a., b., and c. above) prior to test initiation?**	**X**		**F-8.8.3**
15.	If the DO of the sample was greater than saturation at the test temperature, was the sample aerated to reduce it prior to test initiation?	X		F-8.8.3
16.	If the sample had a chlorine residual, was it dechlorinated?	N/A		F-8.8.7 S-8.8.7
17.	Did the permit allow for dechlorination of the sample? (Only if it contains a compliance schedule for a chlorine limit or for dechlorination)	N/A		DEQ guidance
18.	If the sample was dechlorinated, were controls treated with the same amount of dechlorination agent and run with untreated controls? (This determines any adverse effect of the dechlorination agent.)	N/A		F-8.8.7 S-8.8.7
19.	Was each sample pH within the 6.0 - 9.0 range?	X		F-8.8.8 S-8.8.9
20.	If 19. is NO, **and** if the sample pH was adjusted, were parallel tests, one with an adjusted pH and one without an adjusted pH, run? ***NOTE: DEQ prefers that the effluent is used "as is", with regard to pH due to the problems associated with multiple samples.***	N/A		F-8.8.8 S-8.8.9
21.	If the pH was adjusted, was it adjusted to pH 7.0 (Freshwater tests) or pH 8.0 (Saltwater tests) by adding 1N NaOH or 1N HCl?	N/A		F-8.8.8 S 8.8.9
22.	**Was the age of the organisms in the correct range at test initiation?** **a. *P. promelas* and *C. variegatus* - <24 hours old preferred (0-48 hours old is acceptable if the organisms are all within 24 hours in age of each other)** **b. *C. dubia* - <24 hours old, within 8 hours of age of each other?** **c. *M. bahia* - 7 days old, within 24 hours of age of each other**	X X		F-Tbl 11-1 S-Tbl 11-3 S-11.10.2.2 F-Tbl 13-3 S-Tbl 13-3
23.	**If the test organisms were obtained from an outside source, was a reference toxicant test run concurrently?**	**N/A**		**F-4.7.1** **4.7.3** **S-4.7.1**
24.	If the concurrently run reference toxicant test should fail to meet acceptability criteria, was the reference toxicant test repeated?	N/A		F-4.7.4 S-4.7.4
25.	**Was a minimum of 5 test concentrations and 1 control set up using concentrations appropriate for the limit or monitoring endpoint specified in the permit?**	**X**		**F-8.10.** **S-8.10**
26.	Was the test chamber size acceptable? a. *P. promelas* - 500 ml minimum b. *C. variegatus* - 300-1000 ml c. *M. bahia* - 400 ml beaker or 8 oz cup (236 ml capacity) d. *C. dubia* - 30 ml minimum	X X		F-Tbl 11-1 S-Tbl 11-3 F-Tbl 13-3 S-Tbl 13-3
27.	Was the sample volume acceptable? a. *P. promelas* - 250 ml minimum b. *C. variegatus* - 250-750 ml c. *M. bahia* - 150 ml d. *C. dubia* - 15 ml minimum	X X		F-Tbl 11-1 S-Tbl 11-3 F-Tbl 13-3 S-Tbl 13-3

#	CHRONIC DATA PARAMETERS - (Some are organism specific)	YES	NO	Manual or Permit Req.
28.	Was the minimum number of replicates per concentration represented? *a.* 4 replicates - *P. promelas, C. variegatus* *b.* 8 replicates - *M. bahia* *c.* 10 replicates - *C. dubia*	X X		F-Tbl 11-1 S-Tbl 11-3 F-Tbl 13-3 S-Tbl 13-3
29.	Was the minimum number of organisms in each replicate? a. 10 organisms - *P. promelas, C. variegatus,* b. 5 organisms - *M. bahia* c. 1 organism - *C. dubia*	X X		F-Tbl 11-1 S-Tbl 11-3 F-Tbl 13-3 S-Tbl 13-3
30.	a. Was the dilution water synthetic moderately hard water or 20% DMW? (applies to freshwater species *P. promelas, C. dubia)* b. Was the dilution water synthetic sea water made with deionized water and sea salts adjusted to 20 $\pm$ 2 ppt, or the same salinity as the receiving water? *(*applies to salt water species, *C. variegatus, M. bahia)*	X		F-7.1.1.1 S-14.6.10.2 DEQ guidance
31.	Freshwater - Was the dilution water hardness within the approximate range of 80-100 mg $CaCO_3$/L?	X		F-Tables 3 & 4
32.	Freshwater - Was the dilution water alkalinity within the approximate range of 57- 64 mg $CaCO_3$/L?	X		F-Tables 3 & 4
33.	Freshwater - Was the dilution water pH within the approximate range of 7.4 – 7.8; or 7.9 – 8.3 for mineral water?	X		F-Tables 3 & 4
34.	**a. The average test temperature for tests using *P. promelas, C. dubia, or C. variegatus* should be 25$\pm$1° C upon initiation and throughout the test. Did the test temperatures deviate by more than 3° C (maximum minus minimum temperature) during the test?** **b. The average test temperature for tests using *M. bahia* should be 26$\pm$1° C upon initiation and throughout the test. Did the test temperatures deviate by more than 3° C (maximum minus minimum temperature) during the test?**	X		**F-4.6.1** **S-Table 3**
35.	**Was the temperature measured daily in one replicate of each concentration?**	X		**F-4.6.1** **S-11.10.7.1.2**
NOTE	***If surrogate sample chambers were used for probe measurements, they MUST have contained the same number of organisms as the test chambers and have been subject to the same conditions as the test chambers; else, the data are not acceptable. This applies to pH, DO and conductivity readings.***			
36.	Was the DO measured daily, at the beginning and end of each 24 hour period, in one replicate of each concentration?	X		F-4.6.1 S-13.10.6.1.1
37.	If the DO dropped to <4.0 mg/l in a test using *P. promelas, C. variegatus*, or *M. bahia,* was aeration initiated? (For a test using *C. dubia*, a low DO sample should be aerated prior to test initiation or renewal, as aeration with the organisms present is impractical.)	N/A		F-8.8.4. S-11.10.4.1
38.	If aeration was necessary (and acceptable), were **all** test chambers aerated for the duration of the test, and the time at which aeration was initiated recorded? (Not applicable to tests using *C. dubia*)	N/A		F-8.8.4.2 S-11.10.4.1
39.	If aeration was necessary (and acceptable), was it applied at a maximum rate of 100 bubbles/minute so as not to cause injury to the organisms?	N/A		F-8.8.4.2 S-11.10.4.1

#	CHRONIC DATA PARAMETERS - (Some are organism specific)	YES	NO	Manual or Permit Req.
40.	Was pH measured at test initiation and at the end of each 24-hour period in one replicate of each concentration?	X		F-8.8.5 S-11.10.7.1.2
41.	Was the pH measured in the effluent sample each day before new test solutions are made?	X		F-8.8.6 S-11.10.7.1.3
42.	If toxicity may be caused by un-ionized ammonia (or where the ammonia is ∃5.0 mg/l), was total ammonia measured?	X		F-8.8.6
43.	a. For a freshwater test, was conductivity measured at the beginning of each 24-hour period in the 100% sample and the control? *(*applies to freshwater species *P. promelas, C. dubia)* ***NOTE: It is recommended that conductivity is measured in one replicate of each dilution at the beginning of each 24-hour period.*** b. For a saltwater test, was the salinity measured at the end of each 24-hour period in one replicate of each concentration? *(*applies to salt water species, *C. variegatus, M. bahia)*	X		F-8.8.5 DEQ guidance S-11.10.7.1.2
44.	For both freshwater and saltwater tests, was the alkalinity measured in 100% effluent and the control at test initiation, and for each new sample? (For saltwater tests, the effluent alkalinity should be measured prior to adjustment with salts.)	X		F-8.8.5.1 S-8.8.5.1
45.	For both freshwater and saltwater tests, was the hardness measured in 100% effluent and the control at test initiation, and for each new sample? (For saltwater tests, the effluent hardness should be measured prior to adjustment with salts.)	X		F-8.8.5.1 S-8.8.5.1
46.	a. For a test using *Mysidopsis bahia*, were the mysids fed *Artemia* nauplii (at a rate of 75/mysid) twice daily? b. For a test using *Pimephales promelas*, were the larvae fed 0.15 ml concentrated *Artemia* nauplii a minimum of twice daily? c. For a test using *Cyprinodon variegatus*, were the larvae fed *Artemia* nauplii once per day at a rate of 0.1 g (wet weight) for days 0-2, and 0.15 g (wet weight) for days 3-6? d. For a test using *Ceriodaphnia dubia*, were the organisms fed 0.1 ml YCT and 0.1 ml algae per day after renewal?	X X		F-11.10.5.1 S-11.10.5 F-13.10.5.1
47.	Was the sample data for the renewal days consistent with the data for the first use of that sample?	X		DEQ guidance
48.	Was the daily photoperiod 16 hours light/8 hours dark?	X		F-13.10.3.1 S-11.10.3
49.	Were the surviving organisms counted daily in all test chambers?	X		F-11.10.6.2.1 S-11.10.7.2.1
50.	Were the number of young produced recorded daily for the *C. dubia* test?	X		F-13.10.6.2.3
51.	Was the occurrence of males present noted in the *C. dubia* test? (Tests with no males noted may be indicative of no males present)	X		F-13.10.9.3
52.	**Were individual treatments with males (1 or 2 replicates) and blocked rows containing ≥ 50% males (3 replicates or more) excluded from data analysis for the reproduction endpoint? (The males are used for survival analysis)**	**X**		**F-13.13.1.4**
53.	Were the daily renewals of chronic test solutions performed no earlier or later than subsequent 24±2 hour periods from test initiation?	X		DEQ guidance

#	CHRONIC DATA PARAMETERS - (Some are organism specific)	YES	NO	Manual or Permit Req.
54.	**a. For tests using *P. promelas, C. variegatus*, or *M. bahia*, was the test terminated 7 days (this is interpreted as 7 24-hour periods) and within ± 1 hour of the time of day at which it was initiated?** **b. For tests using *C. dubia*, was the test terminated when 60% or more of the surviving females in the controls had produced their third brood within 8 days?**	X X		**F-Table 1 and DEQ guidance** **S-11.10.9.1** **F-13.10.9.1**
55.	Was the percent survival in each concentration recorded at the end of the test?	X		DEQ guidance
56.	**Was the percent survival in the controls ≥80%?**	X		**F-13.12.1** **F-11.12.1** **S-11.12.1** **S-14.12.1**
57.	**Did the test meet the additional acceptability criteria?** **a. *P. promelas* - For tests initiated with larvae ≤ 24 hours old, was the average dry weight of the control larvae surviving at the end of the test ≥ 0.25 mg?** **b. *C. variegatus* - For tests initiated with larvae ≤ 24 hours old, was the average dry weight of control larvae ≥ 0.60 mg (unpreserved), or ≥ 0.50 mg (preserved)?** **c. *M. bahia* - Was the average weight of the controls ≥ 0.20 mg?** **d. *C. dubia* - Did reproduction in the controls average 15 or more young per surviving female? NOTE: Fourth brood neonates should not be counted. In addition to these test acceptability criteria, if fewer than eight replicates in the control remain after excluding males and blocks with 50% or more surviving organisms identified as males, the test is invalid and must be repeated with newly collected samples.**	X X		**F-11.12.1** **S-11.12.1** **S-14.12.1** **F-13.2.1** **13.13.1.4**
58.	Were the data Arcsin transformed prior to statistical analysis (*M. bahia, C. variegatus, P. promelas* – survival)?	X		S-Figure 5
59.	Was the NOEC correctly determined using the appropriate statistical method?	X		F-9.1
60.	**Was the PMSD for the sublethal endpoint within upper bounds? (applicable for tests performed after 12/1/02)** **a. *P. promelas* growth - 30%** **b. *C. dubia* reproduction - 47%** **c. *M. bahia* growth - 37%** **If the PMSD was greater than the criterion but significant reduction identified at the IWC then the test is acceptable (A bold item?)**	X	**X**	**F,S-10.2.8**
61.	**If the PMSD exceeded the upper bound and no significant reduction was identified at the IWC, was the test repeated?**	**N/A**		**F,S-10.2.8.2.4.2**
62.	Did the test result in a calculable NOEC (Result reported as "<" is not acceptable. Lower dilutions should have been added or the test rerun to determine the result.)	X		DEQ guidance
63.	Was the IC_{25} reported for the test?	X		F-9.1
64.	Was the LC_{50} at 48 hours reported for the test?	X		DEQ guidance

Items in bold type (and shaded) are significant in that if they are answered "NO", the test is automatically invalidated and must be repeated to fulfill permit TMP requirements. Bold type items are numbers 2, 3, 4, 7, 10, 11, 14, 22, 23, 25, 34, 35, 52, 54, 56, 57, 60 and 61.

RESPONSE GUIDE

1. Yes
2. Yes
3. Yes
4. Yes
5. Yes, preferably
6. Yes
7. Yes
8. Yes, preferably
9. Yes, preferably; NA
10. Yes, unless granted variance
11. Yes, unless granted variance
12. Yes, or NA
13. Yes
14. If 13. is "No", then Yes; NA
15. Yes; No; NA
16. Yes; No; NA
17. If 16. is "Yes", then Yes
18. If 16. is "Yes", then Yes
19. Yes; No
20. Yes; NA
21. Yes; NA
22. Yes
23. Yes; NA
24. Yes; NA
25. Yes
26. Yes
27. Yes
28. Yes
29. Yes
30. Yes
31. Yes
32. Yes
33. Yes
34. No
35. Yes
36. Yes
37. Yes; NA
38. If 37. is "Yes", then Yes; NA
39. If 37. is "Yes", then Yes; NA
40 Yes
41. Yes
42. Yes; NA
43. Yes
44. Yes
45. Yes
46. Yes
47. Yes
48. Yes
49. Yes
50. Yes
51. Yes; NA
52. Yes
53. Yes, preferably
54. Yes
55. Yes
56. Yes
57. Yes
58. Yes
59. Yes
60. Yes
61. Yes
62-64. Yes

RESULTS

ACCEPTABLE	NOT ACCEPTABLE

COMMENTS: The PMSD for the chronic P. Promelas test exceeded the upper limit of 30% due to replicate specific mortality which is indicative of an indigenous pathogen. A 100% effluent sample was analyzed after treatment with UV and yielded an acceptable PMSD of 12%.

ACUTE TEST DATA REVIEW CHECKLIST
Revised October 13, 2004

Referencing "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms", Fifth Edition, EPA 821-R-02-012, October 2002

Permit Number VA0002071 Outfall 005 Permittee Dominion Power Possum Point
Test Start Date 05/22/06 Period Reviewed: QT X SA ___ AN ___ Other
1st ___ 2nd ___ 3rd ___ 4th ___

Testing Laboratory CBI

#	ACUTE DATA PARAMETER - (Some are organism specific)	YES	NO	Manual or Permit Req.
1.	Was the test performed as per schedule?	X		Permit
2.	**Was the correct test performed?**	X		Permit
3.	**Was the correct type of sample used?**	X		Permit
4.	Was the chain of custody form supplied with the test report?	X		DEQ guidance
5.	Were pH, temp, Cl of sample checked at sample site (or within 15 minutes of sample retrieval)?	X		DEQ guidance
6.	If the sample was collected for off-site toxicity testing, was it held at 0-6° C during collection (composite) or chilled immediately following collection (grab)?	X		8.5.7.1
7.	**Was the sample packed in ice and chilled to 0-6° C for transport to an off-site toxicity testing facility? NOTE: Frozen samples are not valid! NOTE: An exception to this would be for samples that are delivered for same day testing that may not have a chance to cool to this temperature range.**	X		**8.5.1, 8.5.7.1**
8.	Were temperature and sample description recorded upon receipt by the lab?	X		8.6.1
9.	Does description (visual, obvious scent) of sample (when received at lab) seem typical for this type of facility?	X		DEQ guidance
10.	**Was the test initiated within 36 hours of sample retrieval from sampler?** NOTE: In isolated cases, an extension to this holding time can be allowed by DEQ (CO). Documentation of this permission must be presented with the test report and include the supportive data mentioned in 8.5.4 and 8.7.1	X		8.5.4, 8.6.2, and 8.7.1
11.	If filtration was necessary to remove debris or indigenous organisms, was a sieve with ∃60 Φm mesh openings (or larger) used?	X		7.3.5
12.	a. Was the sample DO ≥ 4.0 mg/l and ≤ saturation at 25° C prior to test initiation? (applies to *C. dubia, P. promelas*) b. Was the sample DO ≥ 4.0 mg/l and ≤ saturation at 25° C at 20 ppt salinity prior to test initiation? (applies to *M. bahia, C. variegatus)* c. Was the sample DO ≥ 6.0 mg/l and ≤ saturation at 12° C prior to test initiation? (applies to *O. mykiss*)		X	9.1.7 9.1.8
13.	**If item 12. is "NO" for meeting the minimum DO levels for the organism used, was the DO adjusted up to the acceptable range (see a., b., and c. above) prior to test initiation?**	**X**		**9.1.8**
14.	If the DO of the sample was greater than saturation at the test temperature, was the sample aerated to reduce it prior to test initiation?	X		9.1.8
15.	If the sample had a chlorine residual, was it dechlorinated?	N/A		9.1.6
16.	**Did the permit allow for dechlorination of the sample? (Only if it contains a compliance schedule for Cl limit or for dechlorination)**	N/A		DEQ guidance Permit

#	ACUTE DATA PARAMETER - (Some are organism specific)	YES	NO	Manual or Permit Req.
17.	If the sample was dechlorinated, were controls treated with the same amount of dechlorination agent and run with untreated controls? (determines adverse effect of agent)	N/A		9.1.6
18.	Was the sample pH within the 6.0 - 9.0 range?	X		9.1.9
19.	If 18. is NO, **and** if the sample pH was adjusted, were parallel tests, one with an adjusted pH and one without an adjusted pH, run? ***NOTE: DEQ prefers that the effluent is used "as is", with regard to pH.***	N/A		9.1.9
20.	If the pH was adjusted, was it adjusted to pH 7.0 (Freshwater tests) or pH 8.0 (Saltwater tests) by adding 1N NaOH or 1N HCl?	N/A		9.1.9
21.	**Was the age of the organisms in the correct range at test initiation?** ***a. P. promelas and C. variegatus* - 1-14 days old, within 24 hours of age of each other** ***b. O. mykiss* – 15 (swim-up or yolk sac adsorption)-30 days old** ***c. C. dubia* - <24 hours old** ***d. M. bahia* - 1-5 days old, within 24 hours of age of each other**	X X		**Tables 11-16**
22.	Were 5 geometric test concentrations (preferably 0.5 series) and 1 control (with the appropriate number of replicates) set up for LC_{50} or multi-dilution NOAEC tests?	X		2.3 9.3.2
23.	If the test organisms were obtained from an outside source, was a reference toxicant test run concurrently?	N/A		4.7.3
24.	If the concurrently run reference toxicant test should fail to meet acceptability criteria, was the reference toxicant test repeated?	N/A		4.7.5
25.	Was the test chamber size acceptable? *a. P. promelas, C. variegatus, M. bahia* - 250 ml minimum *b. O. mykiss* - 5000 ml minimum *c. C. dubia* - 30 ml minimum	 X X		Tables 12-19
26.	Was the sample volume acceptable? *a. P. promelas, C. variegatus, M. bahia* - 200 ml minimum *b. O. mykiss* - 4000 ml minimum *c. C. dubia* - 15 ml minimum	X X		Tables 12-19
27.	Was the minimum number of replicates per concentration represented? *a.* 2 replicates (LC_{50} tests) - *P. promelas, O. mykiss, C. variegatus, M. bahia* *Note: Some permits may specify 4 reps with 5 organisms in each for the NOAEC test, which is acceptable.* *b.* 4 replicates (LC_{50} tests) – *C. dubia*	X X		Tables 12-19
28.	Was the minimum number of organisms in each replicate (the number of organisms times the number of replicates must equal 20 or more)? *a.* 10 organisms (LC_{50} tests) - *P. promelas, O. mykiss, C. variegatus, M. bahia* *Note: Some permits may specify 4 reps with 5 organisms in each for the NOAEC test, which is acceptable.* *b.* 5 organisms (LC_{50} tests) – *C. dubia*	X X		Tables 12-19
29.	a. Was the dilution water synthetic moderately hard water or 20% DMW? (applies to freshwater species *P. promelas, O. mykiss, C. dubia)* b. Was the dilution water synthetic sea water made with deionized water and sea salts adjusted to 20 $\pm$ 2 ppt, or the same salinity as the receiving water? (applies to salt water species, *C. variegatus, M. bahia)*	X		7.1.1.1. 7.2.1. Table 7.
30.	Freshwater - Was the dilution water hardness within the range of 80-100 mg $CaCO_3$/L?	X		Tables 7, 8

#	ACUTE DATA PARAMETER - (Some are organism specific)	YES	NO	Manual or Permit Req.
31.	Freshwater - Was the dilution water alkalinity within the 57-64 mg $CaCO_3$/L?	X		Tables 7, 8
32.	Freshwater - Was the dilution water pH within the range of 7.4 – 7.8, or 7.9 – 8.3 for mineral water?	X		Tables 7, 8
33.	**a. The average test temperature for tests using *P. promelas, C. dubia C. variegatus, or M. bahia* should be 25±1° C upon initiation and throughout the test. Did the test temperatures deviate by not more than 3° C (maximum minus minimum temperature) during the test?** **b. The average test temperature for tests using *O. mykiss* should be 12±1° C upon initiation and throughout the test. Did the test temperatures deviate by not more than 3° C (maximum minus minimum temperature) during the test?**	X		**9.12.1, Tables 12-19, and DEQ guidance**
34.	**Was the temperature measured daily in one replicate of each concentration?**	X		4.6.1 10.2.1.4
NOTE	*If surrogate sample chambers were used for probe measurements, they MUST have contained the same number of organisms as the test chambers and have been subject to the same conditions as the test chambers; else, the data are not acceptable. This applies to pH, DO and conductivity readings.*			
35.	Was the DO measured daily in one replicate of each concentration? .	X		4.6.1 10.2.1
36.	If the DO dropped to <4.0 mg/l, was aeration initiated? (Exceptions to this requirement are for tests *using C. dubia,* where aeration is impractical.)	N/A		9.14.1
37.	If aeration was necessary (and acceptable), were **all** test chambers aerated for the duration of the test, and the time at which aeration was initiated recorded?	N/A		9.14.2
38.	If aeration was necessary (and acceptable), was it applied at a maximum rate of 100 bubbles/minute so as not to cause injury to the organisms?	N/A		9.14.2
39.	Was pH measured at the 0, 24, and 48 hours for a 48-hour test, or at 0, 24, 48 hours, after renewal, 72 and at 96 hours for a 96-hour test in one replicate of each sample concentration?	X		4.6.1 10.2.1
40.	a. For a freshwater test, was conductivity measured at the beginning and end (also at renewal for 96-hour tests) of the test in the highest concentration and the control? (applies to freshwater species *P. promelas, O. mykiss, C. dubia)* **NOTE: It is recommended by DEQ that conductivity is measured in one replicate of each concentration at the beginning, renewal, and termination of a test.** b. For a saltwater test, was salinity measured at the beginning and end (also at renewal for 96-hour tests) of the test in the highest concentration and the control? (applies to salt water species, *C. variegatus, M. bahia)* **NOTE: It is recommended by DEQ that salinity is measured in one replicate of each concentration at the beginning, renewal, and termination of a test.**	N/A		10.2.1, 10.2.3 and DEQ guidance
41.	For freshwater tests, was the alkalinity measured in 100% effluent and the control at the beginning of the test and at test renewal if the test is 96 hours in duration?	X		9.1.4 10.2.1.1
42.	For freshwater tests, was the hardness measured in 100% effluent and the control at the beginning of the test and at test renewal if the test is 96 hours in duration?	X		9.1.4 10.2.1.1
43.	Was total ammonia measured in the effluent where toxicity may be contributed by unionized ammonia (i.e., where total ammonia ∃5 mg/l)?	X		9.1.5

#	ACUTE DATA PARAMETER - (Some are organism specific)	YES	NO	Manual or Permit Req.
44.	a. For a test using *Mysidopsis bahia*, were the mysids fed *Artemia* nauplii daily? b. For a 96-hour test using *Pimephales promelas,* or *Cyprinodon variegatus*, were the larvae fed prior to sample renewal at 48 hours?	N/A		9.11.1
45.	For a 96-hour test using *Pimephales promelas, Oncorhynchus mykiss,* or *Cyprinodon variegatus*, was the sample used for renewal the original sample?	N/A		8.5.4
46.	Was the daily photoperiod 16 hours light/8 hours dark?	X		9.10
47.	Were the surviving organisms counted daily in all test chambers?	X		10.1.4
48.	**Was the test terminated at 48±1 hours (less than 47 hours invalidates the test) or 96±1 hours (less than 95 hours invalidates the test)?**	**X**		**DEQ guidance**
49.	Was the percent survival in each concentration recorded at the end of the test?	X		DEQ guidance
50.	**Was the percent survival in the controls ≥90%?**	X		4.9.19.16.1
51.	Was the LC_{50} correctly determined?	X		11.2
52.	If the acute test was run in conjunction with a chronic test using the same species, was the acute test initiated with the second or third sample pulled for the chronic test? (Any sample other than the same sample used to initiate the chronic test is preferred.)	X		DEQ guidance

Comments on the Acute Data Review Form

Items in bold type (and shaded) are significant in that if they are answered "NO", the test is automatically deemed "not acceptable" and must be repeated to fulfill permit TMP requirements. Bold type items are numbers 2, 3, 7, 10, 13, 16, 21, 22, 23, 33, 34, 48 and 50.

RESPONSE GUIDE

1. Yes
2. Yes
3. Yes
4. Yes
5. Yes, preferably
6. Yes
7. Yes
8. Yes
9. Yes or N/A
10. Yes
11. Yes or N/A
12. Yes
13. If 12 "No", then Yes
14. Yes
15. Yes or No
16. Yes if 15. is "Yes", or No if 15. is "No"
17. Yes if 15. is "Yes", or N/A
18. Yes or No
19. to 35 Yes
36. Yes or N/A
37. to 52 Yes

RATING

ACCEPTABLE	NOT ACCEPTABLE

Comments

CHRONIC TEST DATA REVIEW CHECKLIST

Revised October 13, 2004

Referencing:

Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, Fourth Edition, EPA 821-R-02-013, October 2002 (Citations preceded by "F")

and

Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Marine and Estuarine Organisms, Third Edition, EPA 821-R-02-014, October 2002 (Citations preceded by "S")

Permit Number VA0002071 Outfall 005 Permittee Dominion Power-Possum Point

Test Start Date 05/17/06

Period Reviewed: QT X SA ___ AN ___ Other ___
1st ___ 2nd ___ 3rd ___ 4th ___

Testing Laboratory CBI

#	CHRONIC DATA PARAMETERS - (Some are organism specific)	YES	NO	Manual or Permit Req.
1.	Was the test performed as per schedule?	X		Permit
2.	**Was the correct test performed?**	X		Permit
3.	**Was the correct type of sample collected at each sampling event?**	X		Permit
4.	**Was a minimum of 3 samples collected?**	X		F-8.3.2
5.	Were pH, temp, Cl of sample checked at sample site (or within 15 minutes of sample retrieval) for each sample?	X		DEQ guidance F-8.5.3
6.	If the samples were collected for off-site toxicity testing, were they held at 0-6° C during collection (composite) or chilled immediately following collection (grab)?	X		F-8.5.2 S-8.5.1
7.	**Was each sample packed in ice and chilled to 0-6° C for transport? NOTE: Frozen samples are not valid! NOTE: An exception to this would be for samples that are delivered for same day testing that may not have a chance to cool to this temperature range.**	X		F-8.5.7.1 S-8.5.7.1
8.	Were temperature and sample description recorded upon receipt of each sample?	X		S-8.6.1 DEQ guidance
9.	Does the description (visual, obvious scent) of each sample (when received at lab) seem typical for this type of facility?	X		DEQ guidance
10.	**Was the test initiated within 36 hours of sample retrieval from sampler?** NOTE: In isolated cases, an extension to this holding time can be allowed by DEQ (CO). Documentation of this permission must be presented with the test report and include the supportive data mentioned in 8.5.4 and 8.7.1	X		F-8.5.4 S-8.5.4
11.	**Was the last use of the sample within 72 HOURS AFTER FIRST USE (sample age should not exceed 108 hours)?**	X		**F-8.5.4** **S-8.5.4**
12.	If filtration was necessary to remove debris or indigenous organisms, was a sieve with ∃60 Φm mesh openings (or larger) used?	X		F-8.8.2 S-7.3.4
13.	**a. Was the sample DO ≥ 4.0 mg/l and ≤ saturation at 25° C prior to test initiation? (applies *to C. dubia* and *P. promelas*)**		**X**	**F-8.8.3**

#	CHRONIC DATA PARAMETERS - (Some are organism specific)	YES	NO	Manual or Permit Req.
	b. Was the sample DO ≥ 4.0 mg/l and ≤ saturation at 25° C and 20 g/kg salinity prior to test initiation? (applies to *C. variegatus)* c. Was the sample DO ≥ 4.0 mg/l and ≤ saturation at 26° C and 20 g/kg salinity prior to test initiation? (applied to *M. bahia*)			**S-8.8.4**
14.	**If item 13. is "NO" for meeting the minimum DO levels for the organism used, was the DO adjusted to the acceptable range (see a., b., and c. above) prior to test initiation?**	**X**		**F-8.8.3**
15.	If the DO of the sample was greater than saturation at the test temperature, was the sample aerated to reduce it prior to test initiation?	X		F-8.8.3
16.	If the sample had a chlorine residual, was it dechlorinated?	N/A		F-8.8.7 S-8.8.7
17.	Did the permit allow for dechlorination of the sample? (Only if it contains a compliance schedule for a chlorine limit or for dechlorination)	N/A		DEQ guidance
18.	If the sample was dechlorinated, were controls treated with the same amount of dechlorination agent and run with untreated controls? (This determines any adverse effect of the dechlorination agent.)	N/A		F-8.8.7 S-8.8.7
19.	Was each sample pH within the 6.0 - 9.0 range?	X		F-8.8.8 S-8.8.9
20.	If 19. is NO, **and** if the sample pH was adjusted, were parallel tests, one with an adjusted pH and one without an adjusted pH, run? ***NOTE: DEQ prefers that the effluent is used "as is", with regard to pH due to the problems associated with multiple samples.***	N/A		F-8.8.8 S-8.8.9
21.	If the pH was adjusted, was it adjusted to pH 7.0 (Freshwater tests) or pH 8.0 (Saltwater tests) by adding 1N NaOH or 1N HCl?	N/A		F-8.8.8 S 8.8.9
22.	**Was the age of the organisms in the correct range at test initiation?** **a. *P. promelas* and *C. variegatus* - <24 hours old preferred (0-48 hours old is acceptable if the organisms are all within 24 hours in age of each other)** **b. *C. dubia* - <24 hours old, within 8 hours of age of each other?** **c. *M. bahia* - 7 days old, within 24 hours of age of each other**	 X X		F-Tbl 11-1 S-Tbl 11-3 S-11.10.2.2 F-Tbl 13-3 S-Tbl 13-3
23.	**If the test organisms were obtained from an outside source, was a reference toxicant test run concurrently?**	**N/A**		**F-4.7.1** **4.7.3** **S-4.7.1**
24.	If the concurrently run reference toxicant test should fail to meet acceptability criteria, was the reference toxicant test repeated?	N/A		F-4.7.4 S-4.7.4
25.	**Was a minimum of 5 test concentrations and 1 control set up using concentrations appropriate for the limit or monitoring endpoint specified in the permit?**	**X**		**F-8.10.** **S-8.10**
26.	Was the test chamber size acceptable? a. *P. promelas* - 500 ml minimum b. *C. variegatus* - 300-1000 ml c. *M. bahia* - 400 ml beaker or 8 oz cup (236 ml capacity) d. *C. dubia* - 30 ml minimum	X X		F-Tbl 11-1 S-Tbl 11-3 F-Tbl 13-3 S-Tbl 13-3
27.	Was the sample volume acceptable? a. *P. promelas* - 250 ml minimum b. *C. variegatus* - 250-750 ml	X		F-Tbl 11-1 S-Tbl 11-3

#	CHRONIC DATA PARAMETERS - (Some are organism specific)	YES	NO	Manual or Permit Req.
	c. *M. bahia* - 150 ml d. *C. dubia* - 15 ml minimum	X		F-Tbl 13-3 S-Tbl 13-3
28.	Was the minimum number of replicates per concentration represented? a. 4 replicates - *P. promelas, C. variegatus* b. 8 replicates - *M. bahia* c. 10 replicates - *C. dubia*	X X		F-Tbl 11-1 S-Tbl 11-3 F-Tbl 13-3 S-Tbl 13-3
29.	Was the minimum number of organisms in each replicate? a. 10 organisms - *P. promelas, C. variegatus,* b. 5 organisms - *M. bahia* c. 1 organism - *C. dubia*	X X		F-Tbl 11-1 S-Tbl 11-3 F-Tbl 13-3 S-Tbl 13-3
30.	a. Was the dilution water synthetic moderately hard water or 20% DMW? (applies to freshwater species *P. promelas, C. dubia)* b. Was the dilution water synthetic sea water made with deionized water and sea salts adjusted to 20 $\pm$ 2 ppt, or the same salinity as the receiving water? *(*applies to salt water species, *C. variegatus, M. bahia)*	X		F-7.1.1.1 S-14.6.10.2 DEQ guidance
31.	Freshwater - Was the dilution water hardness within the approximate range of 80-100 mg $CaCO_3$/L?	X		F-Tables 3 & 4
32.	Freshwater - Was the dilution water alkalinity within the approximate range of 57- 64 mg $CaCO_3$/L?	X		F-Tables 3 & 4
33.	Freshwater - Was the dilution water pH within the approximate range of 7.4 – 7.8; or 7.9 – 8.3 for mineral water?	X		F-Tables 3 & 4
34.	**a. The average test temperature for tests using *P. promelas, C. dubia, or C. variegatus* should be 25$\pm$1° C upon initiation and throughout the test. Did the test temperatures deviate by more than 3° C (maximum minus minimum temperature) during the test?** **b. The average test temperature for tests using *M. bahia* should be 26$\pm$1° C upon initiation and throughout the test. Did the test temperatures deviate by more than 3° C (maximum minus minimum temperature) during the test?**	X		**F-4.6.1** **S-Table 3**
35.	**Was the temperature measured daily in one replicate of each concentration?**	X		**F-4.6.1** **S-11.10.7.1.2**
NOTE	***If surrogate sample chambers were used for probe measurements, they MUST have contained the same number of organisms as the test chambers and have been subject to the same conditions as the test chambers; else, the data are not acceptable. This applies to pH, DO and conductivity readings.***			
36.	Was the DO measured daily, at the beginning and end of each 24 hour period, in one replicate of each concentration?	X		F-4.6.1 S-13.10.6.1.1
37.	If the DO dropped to <4.0 mg/l in a test using *P. promelas, C. variegatus*, or *M. bahia,* was aeration initiated? (For a test using *C. dubia*, a low DO sample should be aerated prior to test initiation or renewal, as aeration with the organisms present is impractical.)	N/A		F-8.8.4. S-11.10.4.1
38.	If aeration was necessary (and acceptable), were **all** test chambers aerated for the duration of the test, and the time at which aeration was initiated recorded? (Not applicable to tests using *C. dubia*)	N/A		F-8.8.4.2 S-11.10.4.1

#	CHRONIC DATA PARAMETERS - (Some are organism specific)	YES	NO	Manual or Permit Req.
39.	If aeration was necessary (and acceptable), was it applied at a maximum rate of 100 bubbles/minute so as not to cause injury to the organisms?	N/A		F-8.8.4.2 S-11.10.4.1
40.	Was pH measured at test initiation and at the end of each 24-hour period in one replicate of each concentration?	X		F-8.8.5 S-11.10.7.1.2
41.	Was the pH measured in the effluent sample each day before new test solutions are made?	X		F-8.8.6 S-11.10.7.1.3
42.	If toxicity may be caused by un-ionized ammonia (or where the ammonia is ∃5.0 mg/l), was total ammonia measured?	X		F-8.8.6
43.	a. For a freshwater test, was conductivity measured at the beginning of each 24-hour period in the 100% sample and the control? *(*applies to freshwater species *P. promelas, C. dubia)* ***NOTE: It is recommended that conductivity is measured in one replicate of each dilution at the beginning of each 24-hour period.*** b. For a saltwater test, was the salinity measured at the end of each 24-hour period in one replicate of each concentration? *(*applies to salt water species, *C. variegatus, M. bahia)*	X		F-8.8.5 DEQ guidance S-11.10.7.1.2
44.	For both freshwater and saltwater tests, was the alkalinity measured in 100% effluent and the control at test initiation, and for each new sample? (For saltwater tests, the effluent alkalinity should be measured prior to adjustment with salts.)	X		F-8.8.5.1 S-8.8.5.1
45.	For both freshwater and saltwater tests, was the hardness measured in 100% effluent and the control at test initiation, and for each new sample? (For saltwater tests, the effluent hardness should be measured prior to adjustment with salts.)	X		F-8.8.5.1 S-8.8.5.1
46.	a. For a test using *Mysidopsis bahia*, were the mysids fed *Artemia* nauplii (at a rate of 75/mysid) twice daily? b. For a test using *Pimephales promelas*, were the larvae fed 0.15 ml concentrated *Artemia* nauplii a minimum of twice daily? c. For a test using *Cyprinodon variegatus*, were the larvae fed *Artemia* nauplii once per day at a rate of 0.1 g (wet weight) for days 0-2, and 0.15 g (wet weight) for days 3-6? d. For a test using *Ceriodaphnia dubia*, were the organisms fed 0.1 ml YCT and 0.1 ml algae per day after renewal?	X X		F-11.10.5.1 S-11.10.5 F-13.10.5.1
47.	Was the sample data for the renewal days consistent with the data for the first use of that sample?	X		DEQ guidance
48.	Was the daily photoperiod 16 hours light/8 hours dark?	X		F-13.10.3.1 S-11.10.3
49.	Were the surviving organisms counted daily in all test chambers?	X		F-11.10.6.2.1 S-11.10.7.2.1
50.	Were the number of young produced recorded daily for the *C. dubia* test?	X		F-13.10.6.2.3
51.	Was the occurrence of males present noted in the *C. dubia* test? (Tests with no males noted may be indicative of no males present)	X		F-13.10.9.3
52.	**Were individual treatments with males (1 or 2 replicates) and blocked rows containing ≥ 50% males (3 replicates or more) excluded from data analysis for the reproduction endpoint? (The males are used for survival analysis)**	**X**		**F-13.13.1.4**
53.	Were the daily renewals of chronic test solutions performed no earlier or later than subsequent	X		DEQ

#	CHRONIC DATA PARAMETERS - (Some are organism specific)	YES	NO	Manual or Permit Req.
	24±2 hour periods from test initiation?			guidance
54.	**a. For tests using *P. promelas, C. variegatus*, or *M. bahia*, was the test terminated 7 days (this is interpreted as 7 24-hour periods) and within ± 1 hour of the time of day at which it was initiated?** **b. For tests using *C. dubia*, was the test terminated when 60% or more of the surviving females in the controls had produced their third brood within 8 days?**	X X		**F-Table 1 and DEQ guidance** **S-11.10.9.1** **F-13.10.9.1**
55.	Was the percent survival in each concentration recorded at the end of the test?	X		DEQ guidance
56.	**Was the percent survival in the controls ≥80%?**	X		**F-13.12.1** **F-11.12.1** **S-11.12.1** **S-14.12.1**
57.	**Did the test meet the additional acceptability criteria?** **a. *P. promelas* - For tests initiated with larvae ≤ 24 hours old, was the average dry weight of the control larvae surviving at the end of the test ≥ 0.25 mg?** **b. *C. variegatus* - For tests initiated with larvae ≤ 24 hours old, was the average dry weight of control larvae ≥ 0.60 mg (unpreserved), or ≥ 0.50 mg (preserved)?** **c. *M. bahia* - Was the average weight of the controls ≥ 0.20 mg?** **d. *C. dubia* - Did reproduction in the controls average 15 or more young per surviving female? NOTE: Fourth brood neonates should not be counted. In addition to these test acceptability criteria, if fewer than eight replicates in the control remain after excluding males and blocks with 50% or more surviving organisms identified as males, the test is invalid and must be repeated with newly collected samples.**	X X		**F-11.12.1** **S-11.12.1** **S-14.12.1** **F-13.2.1** **13.13.1.4**
58.	Were the data Arcsin transformed prior to statistical analysis (*M. bahia, C. variegatus, P. promelas* – survival)?	X		S-Figure 5
59.	Was the NOEC correctly determined using the appropriate statistical method?	X		F-9.1
60.	**Was the PMSD for the sublethal endpoint within upper bounds? (applicable for tests performed after 12/1/02)** **a. *P. promelas* growth - 30%** **b. *C. dubia* reproduction - 47%** **c. *M. bahia* growth - 37%** **If the PMSD was greater than the criterion but significant reduction identified at the IWC then the test is acceptable (A bold item?)**	 **X** **X**		**F,S-10.2.8**
61.	**If the PMSD exceeded the upper bound and no significant reduction was identified at the IWC, was the test repeated?**	**N/A**		**F,S-10.2.8.2.4.2**
62.	Did the test result in a calculable NOEC (Result reported as "<" is not acceptable. Lower dilutions should have been added or the test rerun to determine the result.)	X		DEQ guidance
63.	Was the IC_{25} reported for the test?	X		F-9.1
64.	Was the LC_{50} at 48 hours reported for the test?	X		DEQ guidance

Items in bold type (and shaded) are significant in that if they are answered "NO", the test is automatically invalidated and must be repeated to fulfill permit TMP requirements. Bold type items are numbers 2, 3, 4, 7, 10, 11, 14, 22, 23, 25, 34, 35, 52, 54, 56, 57, 60 and 61.

RESPONSE GUIDE

1. Yes
2. Yes
3. Yes
4. Yes
5. Yes, preferably
6. Yes
7. Yes
8. Yes, preferably
9. Yes, preferably; NA
10. Yes, unless granted variance
11. Yes, unless granted variance
12. Yes, or NA
13. Yes
14. If 13. is "No", then Yes; NA
15. Yes; No; NA
16. Yes; No; NA
17. If 16. is "Yes", then Yes
18. If 16. is "Yes", then Yes
19. Yes; No
20. Yes; NA
21. Yes; NA
22. Yes
23. Yes; NA
24. Yes; NA
25. Yes
26. Yes
27. Yes
28. Yes
29. Yes
30. Yes
31. Yes
32. Yes
33. Yes
34. No
35. Yes
36. Yes
37. Yes; NA
38. If 37. is "Yes", then Yes; NA
39. If 37. is "Yes", then Yes; NA
40 Yes
41. Yes
42. Yes; NA
43. Yes
44. Yes
45. Yes
46. Yes
47. Yes
48. Yes
49. Yes
50. Yes
51. Yes; NA
52. Yes
53. Yes, preferably
54. Yes
55. Yes
56. Yes
57. Yes
58. Yes
59. Yes
60. Yes
61. Yes
62-64. Yes

RESULTS

ACCEPTABLE	NOT ACCEPTABLE

COMMENTS:

25 230 G.3-4-5

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Northern Virginia Regional Office
13901 Crown Court **Woodbridge, VA 22193** **703) 583-3840**

SUBJECT: TOXICS MANAGEMENT PROGRAM DATA REVIEW
Virginia Power - Possum Point Power Station (VA0002071)
REVIEWER: Shih-Cheng Chang
DATE: November 17, 2005
COPIES: EPA Region III; OWPP-TMP; Tom Faha

PREVIOUS REVIEW: March 8, 2005

DATA REVIEWED:

This review covers the following acute and chronic toxicity tests conducted on effluent samples collected from Outfalls 001/002, 004, 005 and the intake. The tests for Outfall 004 were based on 24-hour composite samples, while the tests for others were based on grab samples.

Outfall		Date	Toxicity Test	Test Species
001/002	5th semiannual	07/11/05	Acute	*C. dubia*
001/002		07/06/05	Chronic	*P. promelas*
004	4th quarterly	04/11/05	Acute	*C. dubia, P. promelas*
004		04/06/05	Chronic	*C. dubia, P. promelas*
005		04/11/05	Acute	*C. dubia, P. promelas*
005		04/06/05	Chronic	*C. dubia, P. promelas*
004	5th quarterly	07/11/05	Acute	*C. dubia, P. promelas*
004		07/07/05	Chronic	*C. dubia, P. promelas*
005		07/12/05	Acute	*C. dubia, P. promelas*
005		07/07/05	Chronic	*C. dubia, P. promelas*
Intake		07/06/05	Chronic	*C. dubia, P. promelas*

Monitoring of the Potomac River intake is not a permit requirement, but a voluntary act by the permittee. The facility withdraws its cooling water from the Potomac River.

DISCUSSION:

The results of these toxicity tests along with the results of previous toxicity tests conducted for Outfalls 001/002, 004, 005 and Intake are summarized in Tables1, 3, 4 and 5 respectively.

The acute toxicity of the effluent samples was determined with the 48-hour static acute toxicity test using *C. dubia* and *P. promelas* as the test species. The chronic toxicity of the samples was determined with the 3-brood static daily renewal survival and reproduction chronic test using *C. dubia* and the 7-day static daily renewal survival and growth chronic test using *P. promelas*.

Outfall 001/002:

The *C. dubia* acute test yielded a No Observed Adverse Effect Concentration (NOAEC) of 100% effluent and passed the acute toxicity criterion. The *P. promelas* chronic test yielded a No Observed

Effect Concentration (NOEC) of 100% effluent, greater than the IWC of 35% and also passed the chronic toxicity criteria. A concurrent *P. promelas* chronic test using 100% effluent sample pretreated with UV was also conducted. No significant difference exists between untreated samples and pretreated samples.

Outfall 004:

The 4th and 5th quarterly acute toxicity tests conducted respectively in April and July 2005 all yielded for either species a NOAEC of 100% effluent, equivalent to 1 TUa, and passed the acute toxicity criterion.

Similarly, both the 4th and 5th quarterly chronic toxicity tests yielded for either species a NOEC of 100% effluent, equivalent to 1 TUc, and also passed the chronic toxicity criterion. A concurrent *P. promelas* chronic test using 100% effluent sample pretreated with UV was also conducted and the results showed no significant difference between control and pretreated samples (4/05) and between untreated samples and pretreated samples (7/05).

Outfall 005:

All the acute toxicity tests, including both 4th and 5th quarterly toxicity tests, yielded for both species a NOAEC of 100% effluent, equivalent to 1 TUa, and passed the acute toxicity criterion.

The two quarterly *C. dubia* chronic tests both yielded a NOEC of 100% effluent, equivalent to 1 TUc, and passed the chronic toxicity criteria. The *P. promelas* chronic test yielded a NOEC of 35% and 100% effluent, respectively, for the 4th (4/05) and 5th (7/05) quarterly test, both exceeding the chronic endpoint of 17% effluent. Pathogens likely were present in the April samples as the 100% effluent samples pretreated with UV showed no significant difference from the control in the test results.

Intake:

The chronic toxicity tests for the intake were performed using both *C. dubia* and *P. promelas* as the test species. The *C. dubia* chronic test yielded a NOEC of 67.5% effluent. The *P. promelas* chronic test yielded a NOEC of 100% effluent.

The facility recently converted the fuel used in generating electricity from coal to fuel oil and natural gas, eliminating coal ash as a result. Units 1 and 2 were taken out of service and Unit 6 started operation. Accordingly, the permit was modified November 10, 2004, so are the biomonitoring requirements.

The 5th quarterly toxicity tests report was received on October 11. After reviewing the report, it was then realized that the reviewer has not received 3th and 4th quarterly toxicity tests reports. Further review of the CEDS indicates that DEQ did receive the 3th and 4th quarterly reports on April 6 and June 10 respectively. After searching the DMR files, the reviewer was able to find and extract only the 4th quarterly toxicity test report. The 3th quarterly test report was nowhere to be found and thus was not available for review.

CONCLUSIONS:

The toxicity tests are valid and the test results acceptable for fulfilling the biomonitoring requirements of the permit.

FACILITY INFORMATION

FACILITY: Virginia Power - Possum Point Power Station
LOCATION: 19000 Possum Point Road; Prince William County
VPDES#: VA0002071
TYPE OF FACILITY: Industrial, major
REGION/PERMIT WRITER: NVRO/ Christine Joyce
PERMIT EFFECTIVE DATE: September 13, 2001
SIC CODE/DESCRIPTION: 4941/steam generation of electricity from fossil fuel
TREATMENT:

Outfalls 001/002: none; Outfall 003: none
Outfall 004: sedimentation, flotation, flocculation, neutralization, and chemical precipitation
Outfall 005: sedimentation, flotation, skimming and flow equalization

OUTFALLS/FLOWS (MAX/AVG):

Outfall 001/002:	once-through, non-contact cooling water from Unit 3, cooling water blowdown from Units 5 and 6 /129 MGD (avg)
Outfall 003:	once-through, non-contact cooling water from Unit 4/ 142.5 MGD (avg)
Outfall 004:	low volume settling basin, which receives wastewater from floor drains, sand filter backwash, Unit 5 evaporator, boiler and R/O blowdowns, and stormwater runoff/ 2.2MGD (avg)
Outfall 005:	ash pond E, which receives wastewater from oily waste treatment basin, the metal cleaning waste treatment facility discharge (internal outfalls 501 and 502), and stormwater runoff/1.2 MGD (avg)

RECEIVING STREAM(S)/7Q10(S)/IWC:

Quantico Creek (Outfalls 001/002, 003, and 004), and Quantico Creek UT (Outfall 005); Potomac River Basin and Subbasin; Section 6; Class II; Special Standards: b, f
7Q10: NA (tidal stream)
IWC: 2% (default value for tidal streams)

TMP EFFECTIVE DATE: April 26, 1985

TMP REQUIREMENTS:

Outfalls 001/ 002: Seminal annual, Grab sample; Acute: *Ceriodaphnia dubia*, NOAEC ; Chronic: Pimephales promelas, NOEC = 35%, 2.85 TUc
Outfall 003: Annual, 24-h flow proportion composite, Acute: *Ceriodaphnia dubia*, NOAEC Chronic: *Pimephales promelas*, NOEC = 35%, 2.85 TUc
Outfall 004: quarterly, 24-h flow proportion composite, Acute: *C. dubia* and *P. promelas,* NOAEC Chronic: *C. dubia* and *P. promelas*, NOEC = 17%, 5.88 TUc
Outfall 005: Grab sample; Quarterly, Acute: *C. dubia* and *P. promelas*, NOAEC Chronic: *C. dubia* and *P. promelas,* NOEC = 35%, 2.85 TUc

TESTING LABORATORY: Coastal Bioanalysts Inc.

BIOMONITORING RESULTS
Virginia Power - Possum Point Power Station (VA0002071)

Table 1. Summary of Toxicity Test Results for Outfall 001/002.

TEST DATE	TEST TYPE/ORGANISM	48-H LC_{50} (%)	IC_{25} (%)	NOEC / NOAEC (%)	% SURV	TUa NOAEC	TUc	REMARKS
6/11/96	Acute *C. dubia*	>100			100			1st annual
6/06/96	Chronic *P. promelas*			30 SG	68			
9/30/97	Acute *C. dubia*	>100			100			2nd annuul
9/24/97	Chronic *P. promelas*			100 SG	90			
8/10/98	Acute *C. dubia*	>100			100			3rd annual
8/6/98	Chronic *P. promelas*			100 SG	98			
10/04/99	Acute *C. dubia*	>100			100			4th annual
9/30/99	Chronic *P. promelas*	>100		100 SG	93			
9/11/00	Acute *C. dubia*	>100			100			5th annual
9/06/00	Chronic *P. promelas*	>100		100 SG	95			
	Permit Reissued September 13, 2001							
11/19/01	Acute *C. dubia*	62.4		50	0	2		1st semiannual
11/14/01	Chronic *P. promelas*	>100	>100	100 SG	95		1	High salinity see Note (1).
06/17/02	Acute *C. dubia*	>100		100	95	1		2nd semiannual
06/12/02	Chronic *P. promelas*	>100	73.8	100 SG	75		1	
05/28/03	Acute *C. dubia*	>100		100	100	1		3rd semiannual
05/27/03	Chronic *P. promelas*	>100	17.4	67.5 S **< 8.8 G**	55		>11.4	
09/10/03	Acute *C. dubia*	>100		100	100	1		
08/06/03	Chronic *P. promelas#*	>100	>100	100 SG	90		1	Retest; UV treated
02/23/04	Acute *C. dubia*	>100		100	100	1		4th semiannual
02/19/04	Chronic *P. promelas#*	>100	86.7	67.5 SG	75		1.48	Pathogen present
*07/11/05	Acute *C. dubia*	>100		100	100	1		5th semiannual
*07/06/05	Chronic *P. promelas*	>100	>100	100 SG	83		1	

Table 2. Summary of Toxicity Test Results for Outfall 003.

TEST DATE	TEST TYPE/ORGANISM	LC_{50} (%)	IC_{25} (%)	NOEC/ NOAEC (%)	% SURV	TUa NOAEC	TUc	REMARKS
6/11/96	Acute *C. dubia*	>100			100			1st annual
6/06/96	Chronic *P. promelas*			100 SG	98			
9/30/97	Acute *C. dubia*	>100			100			2nd annual
9/25/97	Chronic *P. promelas*			100 SG	98			
8/10/98	Acute *C. dubia*	>100			95			3rd annual
8/6/98	Chronic *P. promelas*	>100		100 SG	100			
10/4/99	Acute *C. dubia*	>100			100			4th annual
9/30/99	Chronic *P. promelas*	>100		100 SG	95			
9/11/00	Acute *C. dubia*	>100			100			5th annual
9/07/00	Chronic *P. promelas*	>100		100 SG	93			

TEST DATE	TEST TYPE/ORGANISM	LC_{50} (%)	IC_{25} (%)	NOEC/ NOAEC (%)	% SURV	TUa NOAEC	TUc	REMARKS
	Permit Reissued September 13, 2001							
11/19/01	Acute *C. dubia*	79.4		50	25	2		1st annual
11/14/01	Chronic *P. promelas*	>100	>100	100 SG	90		1	High salinity, See Note (1).
06/17/02	Acute *C. dubia*	>100		100	100	1		2nd annual
06/12/02	Chronic *P. promelas*	>100	>100	35 SG	95		2.86	
05/19/03	Acute *C. dubia*	>100		100	100	1		3rd annual
05/15/03	Chronic *P. promelas*	>100	11.5	67.5 S **8.8 G**	33		**11.4**	
08/07/03	Chronic *P. promelas#*	>100	>100	100 SG	95		1	Retest; UV treated
02/23/04	Acute *C. dubia*	>100		100	100	1		4th annual
02/19/04	Chronic *P. promelas*	>100	>100	100 SG	93		1	

Table 3. Summary of Toxicity Test Results for Outfall 004.

TEST DATE	TEST TYPE/ORGANISM	48-H LC_{50} (%)	IC_{25} (%)	NOEC/ NOAEC (%)	% SURV	TUa NOAEC	TUc	REMARKS
6/11/96	Acute *P. promelas*	100			100			1st annual
6/06/96	Chronic *P. promelas*			100 SG	100			
9/30/97	Acute *P. promelas*	>100			100			2nd annual
9/25/97	Chronic *P. promelas*			100 SG	85			
8/11/98	Acute *P. promelas*	>100			100			3rd annual
8/6/98	Chronic *P. promelas*			100 SG	98			
10/5/99	Acute *P. promelas*	>100			95			4th annual
9/30/99	Chronic *P. promelas*			100 SG	98			
9/12/00	Acute *P. promelas*	>100			100			5th annual
9/7/00	Chronic *P. promelas*			100 SG	80			
	Permit Reissued September 13, 2001							
11/19/01	Acute *P. promelas*	>100		100	100	1		1st annual
11/14/01	Chronic *P. promelas*	>100	>100	100 SG	95		1	
06/17/02	Acute *P. promelas*	>100		100	100	1		2nd annual
06/12/02	Chronic *P. promelas*	>100	>100	100 SG	98		1	
05/20/03	Acute *P. promelas*	>100		100	100	1		3rd annual
05/15/03	Chronic *P. promelas*	>100	>100	100 SG	100		1	
08/12/03	Acute *P. promelas*	>100		100	100	1		Extra
08/07/03	Chronic *P. promelas*	>100	>100	100 SG	95		1	
02/23/04	Acute *P. promelas*	>100		100	100	1		4th annual
02/19/04	Chronic *P. promelas*	>100	>100	100 SG	95		1	
12/13/04	Acute *C. dubia*	>100		100	100	1		2nd quarterly
12/13/04	Acute *P. promelas*	>100		100	100	1		

TEST DATE	TEST TYPE/ORGANISM	48-H LC_{50} (%)	IC_{25} (%)	NOEC/ NOAEC (%)	% SURV	TUa NOAEC	TUc	REMARKS
12/08/04	Chronic *C. dubia*	>100	>100	100 SR	100		1	
12/08/04	Chronic *P. promelas*	>100	15	**17 S 8.5 G**	75		**11.8**	Pathogen at work ?
*04/11/05	Acute *C. dubia*	>100		100	100	1		4th quarterly
*04/11/05	Acute *P. promelas*	>100		100	100	1		
*04/06/05	Chronic *C. dubia*	>100	>100	100 SR	90		1	
*04/06/05	Chronic *P. promelas*	>100	>100	100 SG	85		1	
*07/11/05	Acute *C. dubia*	>100		100	100	1		5th quarterly
*07/11/05	Acute *P. promelas*	>100		100	100	1		
*07/07/05	Chronic *C. dubia*	>100	>100	100 SR	100		1	
*07/07/05	Chronic *P. promelas*	>100	>100	100 SG	93		1	

Table 4. Summary of Toxicity Test Results for Outfall 005.

TEST DATE	TEST TYPE/ORGANISM	48-H LC_{50} (%)	IC_{25} (%)	NOEC / NOAEC (%)	% SURV	TUa NOAEC	TUc	REMARKS
6/11/96	Acute *C. dubia*	>100			90			1st annual
6/06/96	Chronic *C. dubia*			100 S 3 R	100			
9/30/97	Acute *C. dubia*	>100			100			2nd annual
9/25/97	Chronic *C. dubia*			100 SR	100			
8/10/98	Acute *C. dubia*	>100			65			3rd annual
8/6/98	Chronic *C. dubia*			30 S 10 R	40			
10/5/99	Acute *C. dubia*	>100			90			4th annual
9/30/99	Chronic *C. dubia*			100 S 10 R	100			
9/11/00	Acute *C. dubia*	>100			100			5th annual
9/7/00	Chronic *C. dubia*			100 S 10 R	80			
	Permit Reissued September 13, 2001							
11/19/01	Acute *C. dubia*	>100		100	95	1		1st annual
11/14/01	Chronic *C. dubia*	>100	10.6	67.5 S **8.8 R**	40		**11.4**	High salinity, see Note (1)
06/17/02	Acute *C. dubia*	12		**6.25**	0	**16**		2nd annual
06/12/02	Chronic *C. dubia*	24.7	2.5	<8.8 SR	0		**>11.4**	
07/09/02	Chronic *C. dubia*	>100	7.0	35 S **<8.8 R**	50		**>11.4**	Retest
09/17/02	Chronic *C. dubia*	>100	11.8	**8.8 S <8.8 R**	0		**>11.4**	Retest; 3527 µMHOs/cm
05/19/03	Acute *C. dubia*	>100		100	100	1		3rd annual
05/15/03	Chronic *C. dubia*	>100	11.7	100 S **8.8 R**	60		**>11.4**	
08/07/03	Chronic *C. dubia*	>100	>100	100 SR	100		1	Retest

TEST DATE	TEST TYPE/ORGANISM	48-H LC_{50} (%)	IC_{25} (%)	NOEC / NOAEC (%)	% SURV	TUa NOAEC	TUc	REMARKS
02/23/04	Acute *C. dubia*	>100		100	75	1		4th annual
02/19/04	Chronic *C. dubia*	>100	24.3	**17.5 SR**	**0**		**5.7**	
12/13/04	Acute *C. dubia*	>100		100	100	1		2nd quarterly
12/13/04	Acute *P. promelas*	>100		100	100	1		
12/09/04	Chronic *C. dubia*	>100	89.9	100 S 67.5 R	80		1.48	
12/09/04	Chronic *P. promelas*	>100	52.3	35 SG	**45**		2.85	Pathogen at work?
*04/11/05	Acute *C. dubia*	>100		100	95	1		4th quarterly
*04/11/05	Acute *P. promelas*	>100		100	100	1		
*04/06/05	Chronic *C. dubia*	>100	>100	100 SR	100		1	
*04/06/05	Chronic *P. promelas*	>100	52.7	35 SG	**58**		2.85	Pathogen at work
*07/12/05	Acute *C. dubia*	>100		100	100	1		5th quarterly
*07/12/05	Acute *P. promelas*	>100		100	100	1		
*07/07/05	Chronic *C. dubia*	>100	>100	100 SR	100		1	
*07/07/05	Chronic *P. promelas*	>100	>100	100 SG	90		1	

Table 5. Summary of Toxicity Test Results for Intake.

TEST DATE	TEST TYPE/ORGANISM	48-H LC_{50} (%)	IC_{25} (%)	NOEC / NOAEC (%)	% SURV	TUa NOAEC	TUc	REMARKS
11/19/01	Acute *C. dubia*	84.1		50	35	2		1st annual
11/14/01	Chronic *P. promelas*	>100	>100	100 SG	93		1	
06/17/02	Acute *C. dubia*	>100		100	100	1		2nd annual
06/12/02	Chronic *P. promelas*	>100	76.5	67.5 SG	25		1.48	
05/15/03	Chronic *C. dubia*	>100	>100	100 SR	80		1	3rd annual
05/15/03	Chronic *P. promelas*	>100	14.1	**8.8 SG**	30		**11.4**	
05/27/03	Chronic *P. promelas*	>100	59.8	35 SG	55		2.86	
08/06/03	Chronic *P. promelas*	>100	>100	100 SG	95		1	
02/18/04	Chronic *C. dubia*	>100	>100	100 SR	100		1	4th annual
02/18/04	Chronic *P. promelas*	>100	73	67.5 SG	63		1.48	Pathogen present
*07/06/05	Chronic *C. dubia*	>100	>100	100 S 67.5 R	100		1.48	
*07/06/05	Chronic *P. promelas*	>100	>100	100 SG	85		1	

* Tests included in the current data review.
# denotes test sample pretreated with UV irradiation to guard against pathogen interference.

Footnote: TUa = 100 / NOAEC TUc = 100 / NOEC

ABBREVIATIONS:

S -- Survival; G -- Growth; R -- Reproduction
% SURV -- Percent survival in 100% effluent
NOAEC – No observed adverse effect concentration (acute toxicity test)
NOEC – No observed effect concentration (chronic toxicity test)

NOTES:

(1) During November 2001 sampling period, the Potomac River was high in salinity due to salt front intrusion. High salinity levels were evidenced by high conductivity in the samples ranging from 3500 to 5200 μmhos/cm. The acute test was conducted on intake water sample on November 19, 2001 and the test results showed an acute toxicity of 2 TUa based on NOAEC of 50% effluent. The 48-hour LC50 was 84.1% and 35% survival in 100% effluent replicate.

Attachment 10

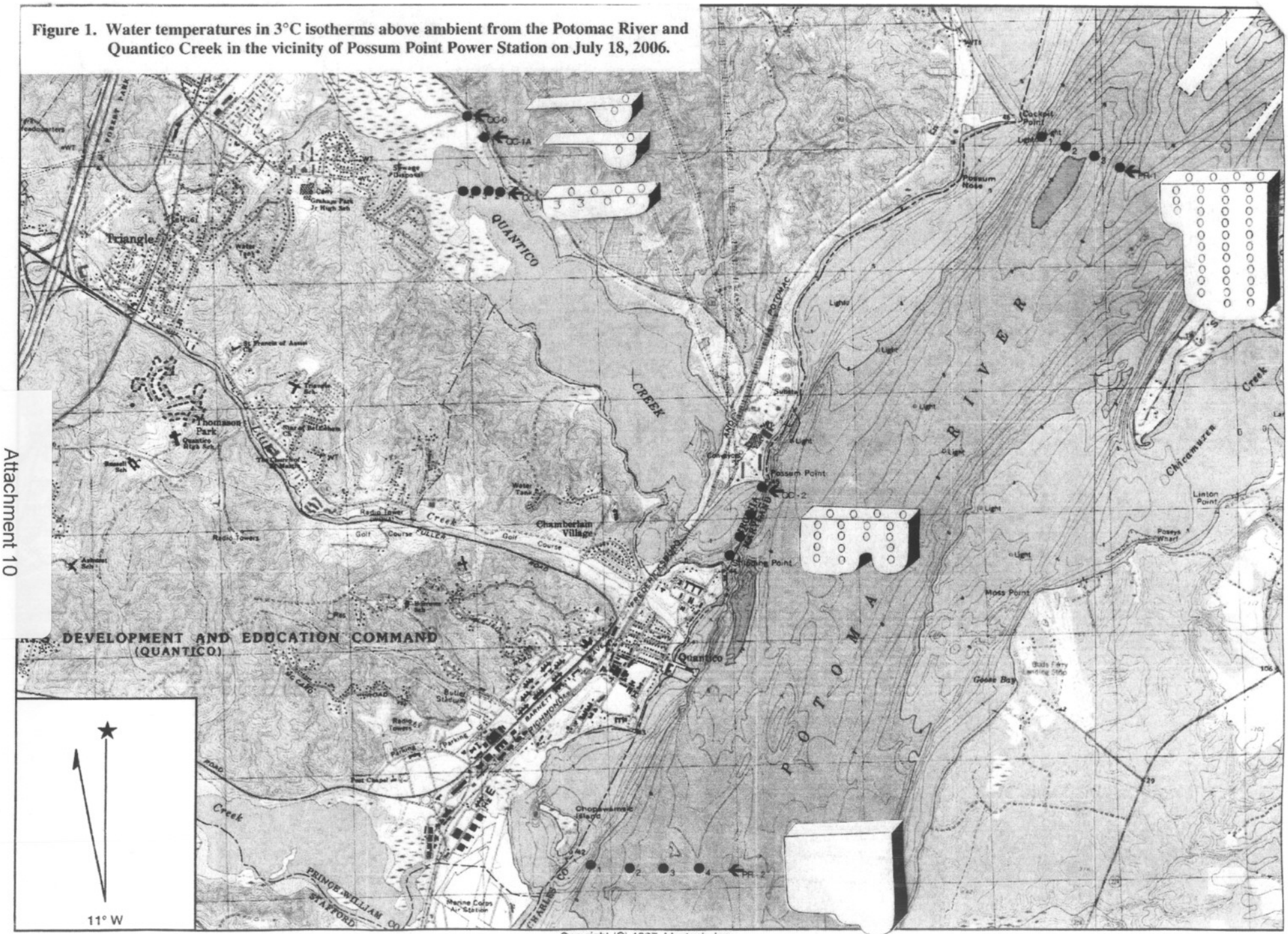


Figure 1. Water temperatures in 3°C isotherms above ambient from the Potomac River and Quantico Creek in the vicinity of Possum Point Power Station on July 18, 2006.

Revised 2/2003

State "Transmittal Checklist" to Assist in Targeting
Municipal and Industrial Individual NPDES Draft Permits for Review

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name:	Dominion Power Possum Point Power Station
NPDES Permit Number:	VA0002071
Permit Writer Name:	Alison L. Thompson
Date:	November 30, 2006

Major [X] **Minor** [ ] **Industrial** [X] **Municipal** [ ]

I.A. Draft Permit Package Submittal Includes:	**Yes**	**No**	**N/A**
1. Permit Application?	X		
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	X		
3. Copy of Public Notice?	X		
4. Complete Fact Sheet?	X		
5. A Priority Pollutant Screening to determine parameters of concern?	X		
6. A Reasonable Potential analysis showing calculated WQBELs?	X		
7. Dissolved Oxygen calculations?			X
8. Whole Effluent Toxicity Test summary and analysis?	X		
9. Permit Rating Sheet for new or modified industrial facilities?	X		

I.B. Permit/Facility Characteristics	**Yes**	**No**	**N/A**
1. Is this a new, or currently unpermitted facility?		X	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	X		
3. Does the fact sheet **or** permit contain a description of the wastewater treatment process?	X		
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?		X	
5. Has there been any change in streamflow characteristics since the last permit was developed?	X		
6. Does the permit allow the discharge of new or increased loadings of any pollutants?		X	
7. Does the fact sheet **or** permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to a 303(d) listed water?	X		
a. Has a TMDL been developed and approved by EPA for the impaired water?		X	
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?	X		
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?		X	
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?	X		
10. Does the permit authorize discharges of storm water?	X		

I.B. Permit/Facility Characteristics – cont.	Yes	No	N/A
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?		X	
12. Are there any production-based, technology-based effluent limits in the permit?	X		
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		X	
14. Are any WQBELs based on an interpretation of narrative criteria?		X	
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		X	
16. Does the permit contain a compliance schedule for any limit or condition?		X	
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?		X	
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?	X		
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		X	
20. Have previous permit, application, and fact sheet been examined?	X		

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Review Checklist – For Non-Municipals
(To be completed and included in the record for all non-POTWs)

II.A. Permit Cover Page/Administration	**Yes**	**No**	**N/A**
1. Does the fact sheet **or** permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits – General Elements	**Yes**	**No**	**N/A**
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether "antibacksliding" provisions were met for any limits that are less stringent than those in the previous NPDES permit?	X		

II.C. Technology-Based Effluent Limits (Effluent Guidelines & BPJ)	**Yes**	**No**	**N/A**
1. Is the facility subject to a national effluent limitations guideline (ELG)?	X		
a. If yes, does the record adequately document the categorization process, including an evaluation of whether the facility is a new source or an existing source?	X		
b. If no, does the record indicate that a technology-based analysis based on Best Professional Judgement (BPJ) was used for all pollutants of concern discharged at treatable concentrations?			X
2. For all limits developed based on BPJ, does the record indicate that the limits are consistent with the criteria established at 40 CFR 125.3(d)?	X		
3. Does the fact sheet adequately document the calculations used to develop both ELG and /or BPJ technology-based effluent limits?	X		
4. For all limits that are based on production or flow, does the record indicate that the calculations are based on a "reasonable measure of ACTUAL production" for the facility (not design)?	X		
5. Does the permit contain "tiered" limits that reflect projected increases in production or flow?		X	
a. If yes, does the permit require the facility to notify the permitting authority when alternate levels of production or flow are attained?			X
6. Are technology-based permit limits expressed in appropriate units of measure (e.g., concentration, mass, SU)?	X		
7. Are all technology-based limits expressed in terms of both maximum daily, weekly average, and/or monthly average limits?	X		
8. Are any final limits less stringent than required by applicable effluent limitations guidelines or BPJ?		X	

II.D. Water Quality-Based Effluent Limits	**Yes**	**No**	**N/A**
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the record indicate that any WQBELs were derived from a completed and EPA approved TMDL?		X	
3. Does the fact sheet provide effluent characteristics for each outfall?	X		
4. Does the fact sheet document that a "reasonable potential" evaluation was performed?	X		
a. If yes, does the fact sheet indicate that the "reasonable potential" evaluation was performed in accordance with the State's approved procedures?	X		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	X		

II.D. Water Quality-Based Effluent Limits – cont.	Yes	No	N/A
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have "reasonable potential"?	X		
d. Does the fact sheet indicate that the "reasonable potential" and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations where data are available)?		X	
e. Does the permit contain numeric effluent limits for all pollutants for which "reasonable potential" was determined?		X	
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	X		
6. For all final WQBELs, are BOTH long-term (e.g., average monthly) AND short-term (e.g., maximum daily, weekly average, instantaneous) effluent limits established?	X		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	X		
8. Does the fact sheet indicate that an "antidegradation" review was performed in accordance with the State's approved antidegradation policy?	X		

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters?	X		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?	X		
3. Does the permit require testing for Whole Effluent Toxicity in accordance with the State's standard practices?	X		

II.F. Special Conditions	Yes	No	N/A
1. Does the permit require development and implementation of a Best Management Practices (BMP) plan or site-specific BMPs?	X		
a. If yes, does the permit adequately incorporate and require compliance with the BMPs?	X		
2. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			X
3. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?	X		

II.G. Standard Conditions	Yes	No	N/A
1. Does the **permit** contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?	X		

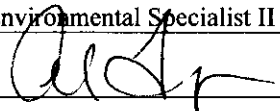
List of Standard Conditions – 40 CFR 122.41

Duty to comply	Property rights	Reporting Requirements
Duty to reapply	Duty to provide information	Planned change
Need to halt or reduce activity not a defense	Inspections and entry	Anticipated noncompliance
	Monitoring and records	Transfers
Duty to mitigate	Signatory requirement	Monitoring reports
Proper O & M	Bypass	Compliance schedules
Permit actions	Upset	24-Hour reporting
		Other non-compliance

2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for existing non-municipal dischargers regarding pollutant notification levels [40 CFR 122.42(a)]?	X		

Part III. Signature Page

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	Alison L. Thompson
Title	Environmental Specialist II
Signature	
Date	4/21/17